

HOPPER

Illinois Dairy Herds
Their Condition and Improvement

Dairy Husbandry

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ILLINOIS DAIRY HERDS
THEIR CONDITION AND IMPROVEMENT

BY

HERBERT ANDREW HOPPER, B. S. A., 1903

THESIS

For the Degree of Master of Science in Dairy Husbandry

in the

Graduate School

of the

University of Illinois

1907

UNIVERSITY OF ILLINOIS

May 24 1907

THIS IS TO CERTIFY THAT THE THESIS PREPARED UNDER MY SUPERVISION BY

Herbert Andrew Hopper

ENTITLED

Illinois Dairy Herds
Their Condition and Improvement.

IS APPROVED BY ME AS FULFILLING THIS PART OF THE REQUIREMENTS FOR THE DEGREE


OF

Master of Science

H. F. Fraser

HEAD OF DEPARTMENT OF

Dairy Husbandry



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TYPICAL UNIMPROVED NATIVE COW.

Year's Record - An Inferior Calf



AN IDEAL DAIRY COW

Nonine Clay 148,079. A.J.C.C.
Year's Record - Milk 10,937.40 pounds
Butter Fat 530.72 pounds
Offspring = \$100.00 - \$300.00

I N T R O D U C T I O N

In spite of its vast importance, agriculture has been the last of the great general subjects to feel the force of scientific investigation. Those who consciously or unconsciously did most toward its development in the past were the farmers, who with rude appliances and scanty knowledge, struggled to make the most of the resources at their command. Their knowledge was empirical and slowly acquired. Its application was difficult of accomplishment. While for a time under pioneer conditions they found imperfect tools, crude methods, and inferior stock servicable, that period has long since passed from us, and we are to read the prosperity of the future in terms of the skill exercised in replacing inferior agents and methods by those of greater efficiency. In all forms of human effort this has been the key to material progress. To the present missionaries of better agricultural thought and practice, it often seems that those who most need their influence are often least cognizant of their advantages to them. Familiarity with the inferior or the adverse often blinds one to the superiority of better things. Sociologists recognize this factor as important to consider in all efforts at amelioration. Perhaps this explains in a large measure the tenacity with which many dairymen persist in retaining inferior cows in their herds, rather than employ the means to know the truth. Familiarity with dairy farm management indicates that blissful ignorance is too often employed in preference to sound knowledge. It is too evident on every hand, that even in this

so-called progressive agricultural age, there is a tremendous lack among dairymen, of what might be called a rational sense of economic proportions.

The Object

The object in making this investigation was primarily to secure accurate data concerning the economic conditions existing upon dairy farms in Illinois, with special reference to the productive capacity of individual cows. It was hoped also to obtain such other facts as have a bearing upon the farm management and the returns from the dairy herd. The investigation here reported covers a period of more than three years, and involves a study of twenty herds individually and collectively. The size of the farms where these animals are kept varies from forty to three hundred acres and the size of the herds ranges from seven to fifty-three cows. As would naturally be expected these cattle are of a heterogeneous nature yet capable of classification; likewise the management which is so often reflected in low production. By taking the conditions as they were found and the yields of the various cows in the different herds as determined by testing them for one or more years, an effort will be made to show the relation in any given case between the yield of a herd and the management to which it has been subjected.

Importance of Dairying

Before proceeding farther it may be well to refer to the importance of dairying in Illinois, and its relation to other branches of agriculture. This will be necessary in order to make sufficiently emphatic the points that will later be brought out. At the beginning of the year 1906, the state possessed the following number of horses, mules, cattle, and swine; having the estimated farm value which is given.

Illinois:

Horses	1,429,473	\$96.96	=	\$138,601,686
Mules	137,776	101.00	=	13,915,374
Dairy Cattle	1,045,200	33.80	=	35,327,760
Other Cattle	1,916,903	21.08	=	40,408,316
Swine	4,683,900	6.95	=	32,553,105

In comparison with the value per head as given for horses and mules, note the inferior price, affixed to the average dairy cow of the state. The dairymen of Illinois are milking twice a day, three hundred and sixty-five days in the year, well up toward a million cows, possessing a farm value of thirty-five million dollars in round numbers. An equal number of mules at the price quoted would have a value of one-hundred five million, five-hundred sixty-five thousand dollars, while the same number of horses would be worth at their price, one-hundred one-million, three hundred and forty-two thousand dollars. Knowing as we do the superior place the dairy cow holds as an economical producer of human food, we may all ask why this low individual value as compared with other forms of farm live stock?

The true basis of the value of any agent is its earning power. This reasoning is being applied in arriving at the value of land in which case it will be readily seen that those soils capable of producing the larger yields for a given amount of labor and expense will command the higher prices. In the same manner those animals that with a given amount of food and labor expended upon them pay the largest profits are likewise most valuable. Without attempting to discuss the earning power of other farm animals let us observe some facts relative to the actual earning power of some dairy herds selected at random. Tables No. 1 and 2 show the actual returns from two herds supplying milk to the same creamery. The amounts delivered and the prices paid were obtained from the books of

Table No. 1

Creamery Patron's Herd. (Natives)

Month	1906	Amount Butter fat	Av. Test	Value	No. Cow	Return Per Cow
January		31.48	4.3	\$7.37	6	\$1.31
February		17.52	4.3	4.38	8	.54
March		29.23	4.1	7.30	14	.52
April		82.15	4.2	22.18	15	1.47
May		373.23	3.9	67.18	20	3.35
June		338.18	3.8	57.49	22	2.61
July		322.58	3.8	58.06	22	2.63
August		316.10	4.1	63.22	22	2.87
September		307.74	3.9	64.62	21	3.07
October		213.06	4.1	49.00	20	2.45
November		152.43	5.1	38.10	18	2.11
December		60.72	4.6	17.00	10	1.70
Total		2344.32		\$456.40		
Av. per cow		106.56				\$20.72
		22 Cows				

Table No. 2

Creamery Patron's Herd. (Natives)

Month	1906-7	Amount Butter fat	Av. Test	Value	No. Cow	Return Per Cow
March		102.45	4.1	\$25.61	8	\$3.20
April		100.88	4.0	18.15	7	2.59
May		199.39	3.7	35.89	10	3.58
June		297.04	3.1	50.49	18	2.80
July		379.03	3.3	68.22	20	3.41
August		353.50	3.6	70.70	20	3.53
September		284.62	3.7	59.77	18	3.32
October		165.57	4.4	38.08	14	2.72
November		93.38	4.7	23.34	12	1.94
December		55.88	5.6	15.64	5	3.12
January		38.84	5.3	10.87	3	3.62
February		19.45	4.6	5.83	3	1.94
Total		2090.03		\$422.59		
Av. per cow		104.50				\$21.12
		20 Cows				

Table No. 3

Creamery Patron's Herd. (Angus)

Month	1906-7	Milk	Test	Butter Fat	Price	Value
January		96	4.1	4.1	29¢	\$1.18
February						
March						
April		1698	3.2	54.3	23¢	12.48
May		4116	3.1	127.5	20¢	25.50
June		3073	3.7	113.7	20¢	22.74
July		1592	4.1	65.2	22¢	14.34
August		1293	4.1	53.0	23¢	12.19
September		1122	4.5	50.4	25¢	12.60
October		1616	4.4	70.6	27¢	19.06
November		606	5.0	30.3	28¢	8.48
December		229	5.0	11.6	31¢	3.60
Total		15,441.0		580.7		\$132.17
Av. per cow		857.8		32.26		7.34
		18 cows				

Table No. 4

Creamery Patron's Herd. (Natives and Grades)

Month	1906-7	Milk	Test	Butter Fat	Price	Value
March		2919	4.6	134.27	29¢	\$38.98
April		2580	4.3	153.20	23¢	35.23
May		4392	4.2	184.40	20¢	36.88
June		3292	4.4	144.80	20¢	28.96
July		2980	4.5	134.10	22¢	29.50
August		2745	4.5	123.50	23¢	28.40
September		1688	4.5	75.90	25¢	19.17
October		1907	4.3	82.00	27¢	22.14
November		1327	4.4	58.30	28¢	16.32
December		1634	4.5	73.50	31¢	22.78
January		1582	4.4	69.60	32¢	22.27
February		2540	4.3	109.20	34¢	37.12
Total		29,586.0		1342.77		\$337.75
Av. per cow		3,287.3		149.19		37.52
		9 cows				

the creamery association while the number of cows supplying the milk each month was obtained from the owner. In Table No. 1 the average annual yield of butter fat per cow was 106.56 pounds, having a value of \$20.72. In Table No. 2 the average yield per cow was 104.50 pounds, with a value of \$21.12. The herds reported in Tables No. 3 and 4 supplied milk for another creamery and their earning power per cow merits attention. The limit of low production seems to have been reached in Table No. 3 where the annual return per cow was \$7.34. Table No. 5 gives the actual return from a herd supplying milk to a condensory where good prices prevailed. For the various months the prices paid were as follows:

Prices paid per 100 pounds for milk at condensory.

December	1903	-----	\$1.50
January	1904	-----	1.57
February	1904	-----	1.58
March	1904	-----	1.40
April	1904	-----	1.20
May	1904	-----	.85
June	1904	-----	.90
July	1904	-----	1.15
August	1904	-----	1.20
September	1904	-----	1.20
October	1904	-----	1.20
November	1904	-----	1.35
December	1904	-----	1.45

Table No. 5

No. Cow	Annual Milk	Amount received
1	4329.1	\$56.10
2	9325.5	112.69
3	6905.6	88.42
4	6258.6	73.93
5	9954.3	119.96
6	7402.2	82.18
7	8303.9	91.58
8	6573.1	76.68
9	5996.0	78.43
10	10001.1	125.43
11	5548.4	71.01
12	9587.5	129.84
13	<u>6764.9</u>	<u>88.26</u>
Total	96,950.2	\$1194.51
Average	7,457.7	91.88

The lowest return per cow was \$56.10, the highest \$129.34, the average being \$91.88. Thus the earning power of individual cows seems to be subject to marked variations as between different herds and within the same herd. The possibility of such variations in production and the number of animals involved in the state would seem to be sufficient excuse for the investigation of a subject which so vitally concerns the dairy industry.

We must not lose sight of the important relation that dairying bears to other lines of agriculture. All legitimate efforts should be directed toward maintaining the productive capacity of the soil. Since agriculture is the basis of all material progress and soil fertility is the support of agriculture, men should recognize the part played by the dairy cow in not only producing a uniform and constant return but at the same time making it possible for the land on which she is kept to yield crops more abundantly.

In the following Table are shown the absolute requirements of different kinds of farm produce for the various elements of plant food.

Table No. 6

Value of Fertility Contained in Farm Produce on Approximate
Maximum Yields per Acre.

Kind	Amount	Value
Corn, grain	100 bu.	18.18
Corn stover	3 T.	11.04
		<u>\$29.22</u>
Wheat, grain	40 bu.	8.28
Wheat straw	2 T.	5.37
		<u>\$13.65</u>
Timothy	2 T.	\$10.74
Clover	3 T.	25.20
Cowpea, hay	3 T.	28.38
Alfalfa	8 T.	75.84
Fat Cattle	1000 lb.	4.65
Fat Hogs	1000 lb.	3.12
Milk	10000 lb.	10.11
Butter	500 lb.	.18

Stated briefly this Table shows the great advantages of dairy farming in maintaining the soil fertility. It shows the loss incident to continuous cropping, when those crops are removed and not feed to animals upon the farm. Furthermore, it shows what we may hope to accomplish in the way of a permanent agriculture if the growing of leguminous crops is rationally combined with the maintenance of a dairy herd. That the low individual value of dairy cows in Illinois is due primarily to their lack of inherent dairy capacity and secondly to inadequate attention and an aimless plan of breeding, will be conclusively shown in the subsequent discussion. Further evidences of the part now played by dairying in strengthening and dignifying agriculture and the farm life, and the still greater role it is destined to act in the future will not be wanting to the reader who prosecutes this subject carefully.

Bibliography

Comparatively little accurate data is at hand which deals with the actual production of individual cows, under ordinary farm conditions. Aside from numerous cow censuses taken in various dairy communities and published in the dairy papers there are but four references to Experiment Station publications worthy of consideration. The former while approximately accurate and of great value for comparison should not be classed with the latter at all. The scarcity of accurate data of this nature is doubtless due to the cost of obtaining it. Neither is reference made to the records which are being accumulated through the advanced register systems of the various breed associations because they are largely records of short time performance of improved cows. The following, however, may be consulted.

University of Illinois

Agricultural Experiment Station

Bulletin No. 85

Records of Individual Cows on Dairy Farms, by Arthur J. Glover.

The records given were obtained by inducing the owners to weigh and sample the milk from each cow in their herd for one week every seventh week. These composite samples were tested by the Babcock method and the percentage of butter fat obtained was used as the average per cent of fat in the milk of the three weeks preceeding and the three weeks following the test. By knowing the date of calving and the end of the lactation period this method allows a very close approximation to the production of each cow.

This bulletin reports the yearly records of eight herds comprising 144 cows. Profits or loss for all cows is estimated upon the basis of 140 pounds of butter fat to pay for feed. The manure and skim milk were assumed to offset the cost of labor, while the calf paid the cows keep when dry.

"Some of the herds returned their owners a good profit, others a small profit, and one herd was kept at a loss. Six herds out of the eight contained cows that did not pay for the food they consumed." The largest yield was 8949 pounds of milk containing 404 pounds of butter fat. The poorest cow produced 1482 pounds of milk containing 58.3 pounds of butter fat. The average yield excepting one improved herd was 4721 pounds of milk and 173 pounds of butter fat. "The most profitable cow gave a net profit of \$57.22 and the poorest cow was kept at an actual loss of \$17.33. The average net profit was \$9.96 per cow."

University of Illinois
Agricultural Experiment Station

Circular No. 77

Records of Individual Cows on Dairy Farms, by Arthur J. Glover.

The records here given were obtained in the same manner as those in bulletin No. 85. In this report there are ten herds containing 189 cows. The largest record was 8230 pounds of milk containing 414 pounds of butter fat. The smallest record was 1866 pounds of milk containing 77 pounds of butter fat. "The average production of all the herds was 5025 pounds of milk containing 200 pounds of butter fat."

University of Illinois
Agricultural Experiment Station

Circular No. 34.

Records of Dairy Herds, by Arthur J. Glover.

"This circular contains the records of five of the eight herds that were reported in Bulletin No. 85 and the records of five of the ten herds that were reported in Circular No. 77. The best cow gave an average yield of 7190 pounds of milk and 367 pounds of butter fat. The poorest

matured cow gave an average yield of 4560 pounds of milk containing 135 pounds of butter fat." The author takes occasion to mention the percentage of increase in yield of the second and third year's production over that of the first. This increase seems to be attributed to better care, better feed, the selling of poor cows and the purchase of good ones.

University of Illinois

Agricultural Experiment Station

Circular No. 102.

Testing Individual Cows, by Herbert A. Hopper.

This circular discusses the care, handling, management, and yield of the cows in eighteen of the twenty herds which form the basis of this thesis.

The Data - How Obtained

The inferior condition of most of the dairy herds of the state has long been known, but it was thought that an actual demonstration of the fact upon the farms where these herds are kept would be influential in inaugurating a movement for better cows as well as furnishing some interesting data. In accordance with this conclusion herds were selected in different parts of the St. Louis Dairy District and in various outlying creamery sections. The original intention was to secure an annual record of every cow in the herd, but there are so many disturbing influences, such as the selling of cows, and the practice of allowing the calves to suck their dams, that many animals were dropped out. The accuracy of the work was safeguarded as much as possible by selecting herds whose owners have a reputation for honesty. There was little temptation for crookedness inasmuch as everyone desired to know the actual production

of each cow in his herd.

Making the Test and Calculating the Records.

Each dairyman was provided scales, sample bottles, milk record sheets, and preservative tablets. In all but two herds Nos. 1 and 4, each milking throughout the year was weighed. In these the milk was weighed only during the weeks of sampling, the intermediate amounts being calculated. In all the other herds weighing was continuous and composite samples to be tested for butter fat were taken every ninth week. These samples were for seven consecutive days and were tested by the Babcock method. The week when samples were taken was made the middle of a nine week period, and the test obtained was used as the average percentage of butter fat in the milk produced during the four weeks preceeding and the four weeks following as well as during the test week. Before beginning this work the complete milk and butter fat records of the cows in the University dairy herd were studied to see how closely the annual production of butter fat could be determined by weighing the milk continuously and testing a composite sample taken every ninth week. A large number of determinations upon this basis showed that the yearly production of butter fat could be calculated to within five per cent of the actual amount. The records about to be presented were obtained in the way just indicated. At all times the composite samples were tested with the greatest care and all calculations have been carefully made.

THE PRESENTATION

All will admit without question, that each herd is largely a problem unto itself; the same as is each farm or any other agricultural enterprise we might see fit to mention. Recognizing as we must the in-

fluence of local conditions, whether pertaining to the soil, or of a market or meteorologic nature upon the management of a dairy herd, it seems that the presentation of this material can be most satisfactorily made by taking up each herd separately. Acting upon this thought and without attempting to follow any precedent the data obtained from the various herds will be presented in tabular form and such information as seems necessary and pertinent to a full understanding of the conditions surrounding the herd under discussion will be added. Occasionally supplementary Tables will be given to point out facts not otherwise easily observed. In every case the Tables are uniform in arrangement and self explanatory. In a few herds the actual length of the lactation period of the different cows is unknown so that it became impossible to determine the average yield of milk or butter fat per day. These irregularities are of small consequence and have but little bearing upon the subject as a whole. Where the performance of a herd is given for more than one year an opportunity will arise to note the influence of the management and breeding in maintaining or increasing production.

Table No. 7

Herd No. 1 - First Year

	No. of cow	Total Milk	Av. Test	Total B. Fat	Age	Breed
Best Cow	10	6099.3	5.17	315.38	7	Gr. Jersey
Poorest Cow	4	4391.3	3.91	171.67	8	Native
Av. of Herd		5934.3	4.47	265.39		
	1	6137.8	4.76	292.75	15	Jersey
	2	5391.0	4.09	220.55	10	Native
	3	6881.9	4.17	287.03	7	Gr. Holstein
	4	4391.3	3.91	171.67	8	Native
	5	4956.9	4.19	208.03	7	Gr. Jersey
	8	5864.8	4.62	271.15	8	Gr. Jersey
	10	6099.3	5.17	315.38	7	Gr. Jersey
	11	5288.6	5.26	278.65	5	Gr. Jersey
	12	6485.9	4.67	303.50	9	Native
	13	6374.9	4.32	275.85	6	Gr. Jersey
	14	6405.2	4.59	294.61	9	Gr. Holstein
		65277.6		2919.22		

Table No. 8

Herd No. 1 Second Year

	No. of Cow	Total Milk	Av. Test	Total B. Fat	Age	Breed
Best Cow	8	6609.1	4.81	317.96	8	Gr. Jersey
Poorest Cow	1	3694.3	4.12	152.23	16	Jersey
Av. of Herd		5516.6	4.16	229.72		
	1	3694.3	4.12	152.23	16	Jersey
	2	4301.0	4.20	181.04	11	Native
	8	6609.1	4.81	317.96	9	Gr. Jersey
	10	5991.9	4.31	258.58	8	Gr. Jersey
	12	6154.0	4.10	252.38	10	Native
	13	6253.2	5.05	316.32	7	Gr. Jersey
	14	6103.4	4.09	249.83	10	Gr. Holstein
	15	4988.0	3.48	173.72	3	Reg. Holstein
	16	7048.5	3.42	241.72	8	Reg. Holstein
	17	6236.8	3.88	242.04	8	Native
	18	5741.9	3.80	218.64	2	Reg. Holstein
	19	4753.3	4.77	225.71	3	Gr. Holstein
	20	3841.1	4.06	156.24	2	Reg. Holstein
		71,716.5		2986.40		

Herd No. 1

At the beginning, the cows in this herd were a mixed lot of natives, together with a few grade Jerseys and others of ill-defined parentage. In spite of the fact that they were an unattractive herd, and poorly housed they made good records. This return is due in a considerable degree to the skill of the owner and feeder, who although he professed to be a novice in the art was able to supply the needs of his individual cows very successfully. The testing of his herd was a source of considerable interest to the owner and led him to a greater appreciation of the differences in cows. Toward the end of the first year a pure-bred sire and some registered females were added. This accounts in some measure for the lower average return the second year which was occasioned by the presence of several immature cows.

Table No. 9

Herd No. 2 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B.fat	Av.Milk Per day	Av.fat Per day	Age	Breed
Best Cow	8	291	8738.7	3.81	333.35	30.02	1.145	8	Gr.Holstein
Poorest Cow	5	286	4928.4	3.92	193.29	17.23	.675	6	Gr.Holstein
Av.of Herd		327	7376.4	3.19	267.75	22.52	.817		
	1	323	5947.6	3.63	217.62	18.41	.673	4	Gr.Holstein
	2	365	7979.0	3.53	280.96	21.86	.767	4	Gr.Holstein
	3	348	7887.2	3.59	282.48	22.66	.811	4	Gr.Holstein
	5	286	4928.4	3.92	193.29	17.23	.675	6	Gr.Holstein
	6	365	7887.8	3.20	252.25	21.61	.691	6	Gr.Holstein
	8	291	8738.8	3.81	333.35	30.02	1.145	8	Gr.Holstein
	9	293	8554.9	3.75	320.57	29.19	1.094	10	Gr.Holstein
	10	349	7088.2	3.69	261.51	20.31	.749	7	Gr.Holstein
59,011.8				2141.03					

Table No. 10

Herd No.2 - Second Year.

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B. fat	Av. Milk Per day	Av. fat Per day	Age	Breed
Best Cow	8	323	8354.5	4.00	335.29	25.86	1.038	9	Gr. Holstein
Poorest Cow	6	260	4593.0	3.44	158.24	17.66	.608	9	Gr. Holstein
Av. of Herd		292	6737.1	3.80	256.61	23.02	.876		
1	365	8237.0	3.87	318.70	22.56	.878	5	Gr. Holstein	
2	274	6019.8	3.47	209.24	21.97	.763	5	Gr. Holstein	
3	217	7161.8	3.62	259.44	32.92	1.103	5	Gr. Holstein	
5	299	5060.5	4.40	224.83	17.57	.780	7	Gr. Holstein	
6	260	4593.0	3.44	158.24	17.66	.608	7	Gr. Holstein	
8	323	8354.5	4.00	335.29	25.86	1.038	9	Gr. Holstein	
9	323	8520.6	3.80	323.99	26.37	1.003	11	Gr. Holstein	
10	291	5949.6	3.76	223.21	20.44	.767	8	Gr. Jersey	
53,896.7			2052.94						

Table No. 11

Herd No. 2 - Third Year

	No. of Cow	Days Milk	in Total Milk	Av. Test	Total B. fat	Av. Milk Per day	Av. fat Per day	Age	Breed
Best Cow	5	338	6805.0	4.29	292.10	20.13	.863	8	Gr. Holstein
Poorest Cow	6	304	7421.4	2.80	208.33	24.41	.685	8	Gr. Holstein
Av. of Herd		318	6888.5	3.63	250.31	21.24	.786		
	1	277	6303.3	3.86	243.78	22.75	.880	6	Gr. Holstein
	2	340	8496.9	3.28	277.97	24.99	.817	6	Gr. Holstein
	3	345	6744.8	3.39	228.90	19.55	.663	6	Gr. Holstein
	5	338	6805.0	4.29	292.10	20.13	.873	8	Gr. Holstein
	6	304	7421.4	2.80	208.33	24.41	.685	8	Gr. Holstein
	8	277	6075.6	2.44	248.07	21.93	.895	10	Gr. Holstein
	9	322	6859.0	3.61	247.97	21.30	.770	12	Gr. Holstein
	10	344	6402.3	3.95	255.42	20.44	.742	9	Gr. Jersey
			55108.30		2002.54				

Herd No. 2

In this herd cows No. 4 and 7 were removed early because of their low production. Of the remaining animals their complete records for three years are given. The total production for the whole herd is very uniform from year to year. However, there is considerable variation in the yield of the different cows from year to year. The slight falling off in the third year is to be attributed to the decline of the older cows and the failure of the younger ones to respond as they should. A pure-bred sire has been kept in this herd for sometime and more recently an excellent one has been placed at the head.



Herd No. 2



Registered Sire used in Herd No. 2

Table No. 12

Herd No. 3 - First Year

	No. of Cow	Days Milk	in Total Milk	Av. Test	Total B.fat	Av.milk Per day	Av.fat Per day	Age	Breed
Best Cow	14	307	9454.3	3.40	324.08	30.79	1.055	3	Gr.Holstein
Poorest Cow	1	211	2956.2	3.82	112.88	14.01	.535	3	Gr.Holstein
Av. of Herd		288	6995.0	3.50	244.93	24.22	.850		
	1	211	2956.2	3.82	112.88	14.01	.535	3	Gr.Holstein
	9	250	5725.6	3.90	223.36	22.90	.893	6	Native
	10	330	7547.8	4.08	308.07	22.87	.933	7	Gr.Shorthorn
	11	296	6719.1	3.27	221.13	22.70	.747	6	Reg.Holstein
	12	340	7590.2	3.44	261.50	22.32	.768	6	Gr.Holstein
	13	283	8972.5	2.94	263.52	31.70	.931	3	Reg.Holstein
	14	307	9454.3	3.40	324.08	30.79	1.055	3	Gr.Holstein
			48,965.7		1714.54				

Table No. 13

Herd No. 3

Cows Sold

No. of Cow	Date of Calving	Test Week, Ending	Pounds Milk	Percent Fat	Pounds B. Fat	Year's Record	
						Milk	B. Fat
2	Aug. 16	Dec. 26	81.3	5.0	4.09		
3	Oct. 8	Dec. 26	95.6	4.2	4.01		
4	Oct. 16	Dec. 26	156.1	4.3	6.71		
5	July 20	Dec. 26	90.9	4.6	4.18		
6	June 15	Dec. 26	132.0	4.0	5.28		
7	July 25	Dec. 26	119.3	4.2	5.02		
8	Oct. 5	Dec. 26	116.7	4.2	4.90		
Average			113.24	4.3	4.38		

Cows Substituted

1	Sep. 11	Dec. 26	96.9	4.0	3.87	2956.2	112.88
9	Feb. 2	Feb. 27	218.4	4.5	9.83	5725.6	223.36
10	Jan. 31	Feb. 27	202.9	4.2	8.52	7547.8	308.07
11	Feb. 25	Apr. 29	158.7	3.2	5.08	6719.1	221.13
12	June 25	Sep. 2	196.6	3.4	6.69	7590.2	261.50
13	Sep. 15	Nov. 4	220.5	3.0	6.62	8972.5	263.52
14	Jan. 10	Mar. 10	256.9	3.4	8.73	9454.3	324.52
15	Dec. 26	Jan. 6	210.9	4.7	9.91	8118.1	387.86
16	June 18	July 14	189.0	4.0	7.56	5710.0	205.77
17	June 6	July 14	277.8	4.6	12.68		
18	Sep. 17	Nov. 17	263.3	2.8	7.37	11,754.0	378.91
19	Nov. 4	Nov. 17	264.8	3.4	9.00	8463.8	320.51
Average			213.0	3.7	7.98	7546.5	273.41



Table No. 14

Herd No. 3 - Second Year

	No. of Cow	Days Milk	in Total Milk	Av. Test	Total B.Fat	Av.Milk Per day	Av.fat Per day	Age	Breed
Best Cow	15	276	8118.1	4.77	387.86	29.41	1.405	3	Gr. Jersey
Poorest Cow	10	213	5014.0	3.73	187.34	23.52	.879	8	Native
Av. of Herd		301	8150.25	3.70	301.66	27.02	1.000		
	10	213	5014.0	3.73	187.34	23.52	.879	8	Native
	11	331	8317.5	4.04	336.50	25.12	1.016	7	Reg. Holstein
	13	330	7988.7	3.28	262.63	24.20	.795	4	Reg. Holstein
	14	325	9836.1	3.41	335.83	30.26	1.033	4	Gr. Holstein
	15	276	8118.1	4.77	387.86	29.41	1.405	4	Gr. Jersey
	16	302	5710.0	3.60	205.77	18.90	.681	3	Gr. Holstein
	18	365	11754.0	3.22	378.91	32.20	1.038	4	Gr. Holstein
	19	271	8463.8	3.78	320.51	31.23	1.182	5	Gr. Holstein
			65,202.2		2415.35				

Herd No. 3

At the beginning of the test this herd was composed of ten native cows. For several years the owner had relied upon the cows of the neighborhood when removals made replenishment necessary. Although progressive in other matters about his farm, the low productive capacity of his cows had actually escaped his notice until called to his attention by the use of the scales and the Babcock test. After weighing the milk from individual cows for two months, and having two sets of composite samples tested, he suddenly decided that their production was not in keeping with his standards of excellence. Accordingly he sold seven of the poorest cows for \$160.00 and shortly afterward bought a registered cow for \$150.00.

Table No. 13 is inserted to compare the weekly yields of the seven cows that were sold with the weekly productions of those substituted for them. As no yearly records of the original seven cows are available this is the most convenient means of comparison. It shows that by exercising care in the purchase of well-bred dairy cows the production was practically doubled. The average yield of the new herd per year was 7546.5 pounds of milk and 273.4 pounds of butter fat. This is doubtless twice as much as the original herd would probably have produced. That substantial progress is being made each year is shown by the increase in the average yield of butter fat from 244.93 pounds of butter fat the first year to 301.36 pounds the second year. In many ways the history of this herd is unique.



Herd No. 3 toward the close of the first year.



Herd No. 3

The first calves from the pure-bred sire.



Herd No. 3 during the second year.



Cow No. 14
Milk 9836.10pounds
Butter Fat 335.33pounds

Herd No. 3

Cow No. 11
8317.5 pounds
336.50 pounds

Table No. 15

Herd No. 4 - First Year

	No. of Cow	Total Milk	Av. Test	Total B. fat	Age	Breed
Best Cow	1	7445.1	4.82	358.59	6	Jersey
Poorest Cow	3	4091.2	3.83	156.71	8	Gr. Shorthorn
Av. of Herd		6219.7	3.89	242.32		
	1	7445.1	4.82	358.59	6	Jersey
	2	6306.0	3.63	228.24	8	Gr. Shorthorn
	3	4091.2	3.83	156.71	8	Gr. Shorthorn
	4	5316.7	3.98	211.76	7	Gr. Shorthorn
	5	6593.4	3.57	235.72	12	Gr. Holstein
	6	6143.6	4.36	268.22	8	Gr. Shorthorn
	9	7913.0	3.49	276.13	9	Gr. Holstein
	10	6509.7	3.07	243.30	7	Gr. Shorthorn
	11	8875.9	3.44	305.72	12	Gr. Holstein
	12	4064.1	4.87	198.10	5	Jer. Holstein
	15	5158.8	3.55	183.06	8	Gr. Holstein
		68,417.51		2665.06		

Herd No. 4

The owner, a patron of a condensory was never thoroughly convinced, that he ought to be a dairyman and consequently never put as much study into his work as he would, had he felt more keenly the importance of that branch of his farm operations. The herd contained some good cows which if they had been properly bred would have produced some high class dairy animals. The owner neglected this golden opportunity by using a beef bull in order that his calves would veal better, even though he was located within easy access of an excellent market for milk.

Table No. 16

Herd No. 6 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B.Fat	Av.Milk Per day	Av.fat Per day	Age	Breed
Best Cow	2	320	9067.0	4.41	399.47	28.33	1.248	7	Gr.Shorthorn
Poorest Cow	16	288	5796.4	3.65	211.80	20.12	.735	2	Gr.Holstein
Av. of Herd		305	7873.19	3.62	285.21	25.78	.934		
1	204	4380.6	5.10	224.54	21.47	1.100	7	Gr.Holstein	
2	320	9067.0	4.41	339.47	28.33	1.248	7	Gr.Shorthorn	
3	326	6521.1	3.37	219.77	20.00	.674	4	Gr.Holstein	
4	296	6683.0	4.29	286.63	22.57	.968	4	Gr.Holstein	
5	358	9908.7	3.01	298.55	27.67	.833	4	Gr.Holstein	
6	275	7302.4	2.65	275.23	26.55	1.000	5	Gr.Holstein	
7	287	8536.5	3.62	308.81	29.74	1.076	4	Gr.Holstein	
8	282	6801.3	3.89	264.24	24.11	.937	5	Gr.Shorthorn	
9	288	6223.0	4.14	257.58	21.60	.894	7	Gr.Holstein	
10	320	9725.7	3.85	374.77	30.39	1.171	8	Reg.Holstein	
11	308	5453.4	4.41	240.40	17.70	.780	2	Reg.Holstein	
12	345	10125.4	3.22	324.23	29.34	.939	4	Gr.Holstein	
13	233	7133.8	3.81	271.81	30.61	1.166	4	Gr.Holstein	
14	323	9028.5	3.75	338.44	27.11	1.016	4	Gr.Holstein	
15	295	7005.0	3.55	248.47	23.74	.842	2	Gr.Holstein	
16	288	5796.4	3.65	211.80	20.12	.735	2	Gr.Holstein	
17	365	10670.2	2.30	297.64	29.23	.315	9	Reg.Holstein	
18	309	9171.3	3.10	285.62	29.68	.936	5	Reg.Holstein	
19	330	9594.1	2.30	274.63	27.07	.832	5	Reg.Holstein	
20	344	8436.5	3.57	301.59	24.52	.376	5	Reg.Holstein	
<hr/>									
			15,7463.9	5704.22					

Table No. 17

Herd No. 6 - Second Year

	No. of Days in Total		Av.	Total	Av. Milk	Av. fat			
	Cow	Milk	Milk	Test	B. fat	Per day	Per day	Age	Breed
Best Cow	21	336	9448.6	3.33	381.72	29.30	1.139	7	Reg. Holstein
Poorest Cow	19	295	6664.5	2.66	177.35	22.59	.601	6	Reg. Holstein
Av. of Herd		296	7854.3	3.47	273.33	26.49	.922		
	1	278	6714.7	4.11	276.53	24.15	.994	8	Gr. Holstein
	4	291	8804.3	3.92	345.56	30.25	1.187	5	Gr. Holstein
	5	279	9500.3	2.69	256.37	34.05	.917	5	Gr. Holstein
	7	278	8107.7	3.74	303.47	29.16	1.091	5	Gr. Holstein
	10	295	7123.6	3.58	255.24	24.11	.365	9	Reg. Holstein
	11	309	5597.7	4.03	225.74	18.11	.735	3	Reg. Holstein
	14	288	7528.5	3.28	247.25	26.14	.358	5	Gr. Holstein
	15	266	6599.3	3.72	245.45	24.31	.922	3	Gr. Holstein
	16	287	6898.3	3.59	247.30	24.03	.398	3	Gr. Holstein
	17	351	8747.4	2.38	252.56	24.92	.719	10	Reg. Holstein
	18	302	8868.6	2.96	263.23	29.36	.372	6	Reg. Holstein
	19	295	6664.5	2.66	177.35	22.59	.301	6	Reg. Holstein
	20	295	9356.2	3.72	348.37	31.71	1.180	6	Reg. Holstein
	21	336	9448.6	3.33	381.72	29.30	1.139	7	Reg. Holstein
109961.0			3826.64						

Herd No. 6

So far as large economical production is concerned this herd is perhaps one of the best studied. The first year's test shows the high average yield of 285.21 pounds of butter fat per cow. It furnishes an excellent example of what may be expected through grading up by persistently using a dairy bull of good breeding and approved form. The illustrations attest to the effort and success of the owner. Great care has been exercised in removing unprofitable individuals. Although located at considerable distance from the factory to which his milk is delivered, over bad roads most of the year, the owner has found dairying profitable. Early recognizing that success lay only in the path of profitable cows he set out to obtain them by the only rational means possible. The falling off in production in the second year is to be accounted for by an excessive drought which effected



Herd No. 6

Registered and Grade Holstein-Friesians



Herd No. 6

Same as above.



Herd No. 6

High Grade Holstein-Friesian Heifers with second Calf.



Same as above

all the herds to some extent. In reducing the size of his herd some of the best cows were sacrificed. Persistancy in milking seems to have been characteristic, which combined with good management and good breeding has given the results observed.

Table No. 18

Herd No. 7 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B. fat	Av. Milk Per day	Av. Fat Per day
Best Cow	8	277	5506.8	4.77	264.01	19.38	.953
Poorest Cow	2	268	3412.1	3.78	128.96	12.73	.481
Av. of Herd		267	4524.7	3.76	170.49	16.33	.634
	1	234	5082.4	3.61	183.70	20.91	.756
	2	268	3412.1	3.78	128.96	12.73	.481
	3	232	4114.5	3.72	148.31	17.73	.640
	4	330	4417.0	4.29	189.33	13.38	.575
	5	282	4131.3	3.76	155.51	14.35	.551
	6	311	4397.2	3.77	165.97	14.14	.533
	7	274	4190.8	3.25	136.58	15.32	.498
	8	277	5506.8	4.77	264.01	19.88	.953
	9	212	4842.7	2.89	140.21	22.84	.661
	10	259	5152.2	3.71	191.58	19.89	.739
			45,247.5		1704.96		

Table No. 19

Herd No. 7

Showing Profit Earned per Cow at a Food Cost of \$35.00 per Year.

No. of Cow	Pounds Milk	Test	Total B.Fat	Value B.Fat at 25¢ lb.	Cost Food	Profit
1	5082.4	3.61	183.70	\$45.90	\$35.00	\$10.90
2	3412.1	3.78	128.96	32.15	35.00	- 2.76
3	4114.5	3.72	148.61	37.15	35.00	2.15
4	4417.0	4.29	189.83	47.45	35.00	12.45
5	4131.8	3.76	155.51	38.88	35.00	3.88
6	4397.2	3.77	165.97	41.49	35.00	6.49
7	4190.8	3.25	136.58	34.14	35.00	.86
8	5506.8	4.77	264.01	71.00	35.00	36.00
9	4842.7	2.89	140.21	35.05	35.00	.05
10	5152.2	3.71	191.58	47.90	35.00	12.90
				\$431.20	\$350.00	\$81.20

Average profit per cow \$8.12
 Omitting No.8, profit per cow \$5.02

Fewer Cows - More Money

1	5082.4	3.61	183.70	\$45.90	\$35.00	\$10.90
4	4417.0	4.29	189.83	47.45	35.00	12.45
6	4397.2	3.77	165.97	41.49	35.00	6.49
8	5506.8	4.77	264.01	71.00	35.00	36.00
10	5152.2	3.71	191.58	47.90	35.00	12.90
				\$253.74	\$175.00	\$78.74

Average profit per cow \$15.74
 Gain 7.62

Herd No. 7

Perhaps no herd shows better than does this one the advantages to be derived from a careful study of the individual cow. It was composed of grade shorthorns and common stock of very poor quality. The owner was induced to test his herd only after considerable persuasion, but the taking of samples and weighing became so arduous that the work was discontinued at the end of the year. The animals were well fed and well housed so that the low production must be attributed to lack of ability. It occasionally happens that a herd of good cows makes a poor return, because they are not given an opportunity to respond in proportion to their ability, from the fact that they are either underfed or maltreated. The low production here cannot be thus explained.

A glance at the Table shows that the best cow No. 8 yielded only 264.01 pounds of butter fat per year, while the poorest No. 2 produced but 128.96 pounds. Here then was a man keeping his herd with scarcely any profit if we estimate the cost of foods at prevailing commercial prices. In Table No. 19 is given the production of each cow and its value at 25 cents per pound for butter fat. A record was kept of the approximate amounts and values of the foods consumed by this herd from which it was determined, that the average cost to feed a cow per year was \$35.00. On this basis, the Table shows that two cows were kept at a loss, while three others gave little or no profit. The herd as a whole paid a profit of only \$81.20 or \$8.12 per cow, while if the five poorest cows had been disposed of, the others would have made a profit to the owner, of \$79.74 or \$15.74 per cow. A pure-bred sire was introduced into the herd, but a year after the test had been completed and after the owner had been plainly instructed to remove the unprofitable cows, a visit to his farm showed that he was still keeping the original herd.



Herd No. 7

Note the absense of dairy conformation. With but one
exception (a heifer at the right) there are
no evidences of dairy blood.

Table No. 20

Herd No. 8 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B.fat	Av. Milk Per day	Av. fat Per day
Best Cow	5	365	6647.0	3.09	263.42	18.21	.721
Poorest Cow	7	167	2690.8	3.61	97.17	15.92	.575
Av. of Herd		293	4485.7	4.29	192.51	15.30	.655
	1	236	3565.2	4.56	165.90	15.10	.703
	2	280	5447.0	3.79	206.31	19.45	.737
	3	196	4100.9	4.52	185.75	20.92	.947
	4	321	4681.4	4.97	232.67	14.58	.724
	5	365	4588.9	4.65	206.56	12.57	.566
	9	365	5482.2	4.04	222.95	15.02	.610
	11	325	3773.5	5.57	189.28	11.61	.582
	12	314	3959.8	3.92	155.18	12.61	.494
			44,929.7		1924.19		

Herd No. 8

As shown by the accompanying Table this herd was very inferior. The low production in general was caused to a considerable extent by the ravages of contagious abortion. Nearly all the cows calved prematurely which necessarily interfered with their lactation. Under the most favorable conditions the "scrubs" which composed this herd could not have performed satisfactorily. They lacked the inherent ability to use food well which is so essential to profitable milk production. The records of the individual cows speak for themselves.

Table No. 21
Herd No. 10 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B.Fat	Av. Milk Per day	Av. Fat Per day
Best Cow	13	336	7291.0	4.31	314.96	21.69	.937
Poorest Cow	3	179	3846.7	4.38	168.48	21.48	.941
Av. of Herd		342	5430.8	4.18	228.31	17.86	.747
	1	271	6047.3	4.46	269.45	22.31	.994
	2	359	5168.1	3.96	204.59	14.39	.569
	3	179	3846.7	4.38	168.48	21.48	.941
	4	346	5972.9	3.68	219.71	17.26	.635
	5	316	5778.7	3.86	222.86	18.28	.705
	7	316	4901.3	4.60	228.35	13.82	.636
	13	336	7291.0	4.31	314.96	21.69	.937
	14	336	5462.9	4.21	231.30	16.25	.688
	15	232	5080.6	4.25	215.86	21.89	.930
	16	296	6981.8	3.44	240.34	23.58	.812
	18	296	4923.7	4.32	212.91	16.63	.719
			70,601.1		2955.14		

Herd No. 10

At the beginning of the test, this herd was made up of eighteen cows of mixed breeding, some of which proved to be creditable animals. They were well fed and so far as noted there were no irregularities to interfere with performance. A pure-bred sire has been added recently which together with cows of such performance gives promise of rapid improvement in the herd. Though the owner had not been long producing milk he had been very successful in assembling cows that were good foundation material.

Table No. 22

Herd No. 11 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B. fat	Av. Milk per day	Av. fat per day	Age	Breed
Best Cow	6	365	6531.0	3.78	246.70	17.89	.677	2	Reg. Holstein
Poorest Cow	5	313	5551.6	3.02	167.56	17.73	.535	2	Reg. Holstein
Av. of Herd		326	5969.44	3.43	205.02	18.30	.628		
1	332		6042.0	3.46	209.23	18.19	.630	2	Reg. Holstein
2	343		6654.9	3.37	224.60	19.40	.654	2	Reg. Holstein
3	344		5767.7	3.68	212.09	16.76	.616	2	Reg. Holstein
4	365		6692.9	3.42	229.05	18.33	.627	2	Reg. Holstein
5	313		5551.6	3.02	167.56	17.73	.535	2	Reg. Holstein
6	365		6531.0	3.78	246.70	17.89	.677	2	Reg. Holstein
7	309		5528.0	3.68	203.46	17.89	.658	7	Gr. Shorthorn
8	269		4963.3	3.51	174.41	18.45	.648	8	Gr. Holstein
9	295		5993.7	2.79	178.08	20.31	.603	8	Gr. Holstein
			53,725.1		1845.18				

Table No. 23

Herd No. 11 - Second Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B. fat	Av. Milk Per day	Av. fat Per day	Age	Breed
Best Cow	5	365	7788.3	3.61	281.41	21.33	.770	3	Reg. Holstein
Poorest Cow	9	279	5634.1	3.12	176.17	20.26	.631	9	Reg. Holstein
Av. of Herd		327	6786.3	3.37	229.22	20.74	.700		
1	365		7771.3	3.50	272.57	21.29	.746	3	Reg. Holstein
2	252		7510.9	3.29	247.45	21.33	.704	3	Reg. Holstein
3	326		7256.6	3.44	249.76	22.25	.766	3	Reg. Holstein
4	323		5394.3	3.60	194.32	16.70	.601	3	Reg. Holstein
5	365		7788.3	3.61	281.41	21.33	.770	3	Reg. Holstein
6	365		7196.5	3.52	253.47	19.71	.694	3	Reg. Holstein
7	344		5120.8	4.10	210.13	14.88	.610	8	Gr. Shorthorn
8	323		5971.0	3.13	187.07	18.48	.578	9	Gr. Holstein
9	279		5634.1	3.12	176.17	20.26	.631	9	Gr. Holstein
10	292		6233.1	2.89	180.03	21.34	.616	5	Reg. Holstein
11	365		8778.5	3.06	269.14	24.59	.737	4	Reg. Holstein
			74,655.7		2521.52				

Herd No. 11

The owner was weighing the milk from his different cows before this test was started. After continuing for nearly three years, he is still following it out in detail. The first year, there were nine grade and registered Holsteins, the second year eleven. It should be observed that in the first year's report, six of the cows were but two years of age and under the circumstances performed very well. It is also of interest to observe that the young registered cows exceeded in production the older grades. Turning to the second year it is seen that No. 5 the poorest cow the first year, was the best one the second year, emphasizing the danger of basing conclusions as to a cow's value upon even one year's performance especially the first period of lactation. All factors bearing upon production as well as the record should be considered. There is a gain in the average butter fat production from 205.02 pounds in the first year to 229.22 pounds in the second. Even though small this is a substantial increase and if continued will soon place this herd on a high plane of production.



Herd No. 11



Herd No. 11, Cow No. 4

Year's Record with first calf
Milk 6692.9 pounds - Butter Fat 229.05 pounds.

Table No. 24

Herd No. 12 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B. fat	Av. Milk Per day	Av. Fat Per day
Best Cow	12	272	6429.4	3.80	248.36	23.63	.913
Poorest Cow	7	197	2090.4	4.33	101.05	10.61	.512
Av. of Herd		266	4503.6	3.89	175.41	16.91	.658
1	340	4790.2	4.04	193.66	14.08	.569	
2	283	5362.9	4.03	216.49	18.95	.764	
3	253	4717.2	4.04	190.70	18.95	.753	
4	308	4648.5	4.14	192.61	15.92	.625	
5	326	5408.1	3.83	207.53	16.58	.636	
6	257	3205.2	4.11	131.77	12.47	.512	
7	197	2090.4	4.33	101.05	10.61	.512	
8	248	4614.9	3.64	168.25	18.60	.678	
9	240	2364.7	3.34	118.38	13.60	.495	
10	278	4898.6	3.53	173.38	17.62	.632	
11	256	5438.5	3.40	189.85	21.24	.741	
12	272	6429.4	3.80	248.36	23.63	.913	
13	203	3678.9	4.01	147.84	18.12	.728	
			58,547.5		2280.37		

Herd No. 12

The owner of this herd was fairly careful about his other farm operations but persisted in the use of a grade "beef" bull. His excuse lay in the fact that all the milk was needed for delivery, so that calves that could be vealed quickly would be most desirable. The herd received good care but was composed of grade Jerseys, grade Holsteins and natives of poor quality several of which had long since seen the day of their highest production. A study of the accompanying Table will show the difficulties in the way of producing milk and butter fat cheaply with cows of this kind. With the present trend of breeding there is little prospect of improvement.

Table No. 25

Herd No. 15 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B. fat	Av. Milk Per day	Av. fat Per day	Age	Breed
Best Cow	3	334	6289.0	4.74	298.57	18.32	.393	5	Gr. Shorthorn
Poorest Cow	12	295	3491.1	3.01	135.29	11.33	.458	2	Gr. Shorthorn
Av. of Herd		292	5145.0	4.06	209.36	17.31	.716	4	
	1	241	4513.0	4.28	193.23	18.34	.785	4	Gr. Shorthorn
	2	294	6251.3	3.45	212.89	21.26	.724	8	Gr. Shorthorn
	3	334	6289.0	4.74	289.57	18.32	.393	5	Gr. Shorthorn
	4	295	4646.6	3.98	185.03	15.75	.627	4	Gr. Jersey
	6	246	4725.5	4.31	204.77	19.61	.832	5	Gr. Shorthorn
	7	251	5399.9	3.85	207.70	21.51	.826	3	Gr. Shorthorn
	8	344	5533.2	3.39	187.64	16.08	.545	3	Gr. Shorthorn
	9	302	4543.5	4.21	191.38	15.04	.333	3	Gr. Shorthorn
	10	323	5075.2	4.11	208.46	15.71	.345	3	Gr. Shorthorn
	11	274	6152.3	4.21	258.88	22.45	.944	5	Gr. Jersey
	12	295	3491.1	3.86	135.29	11.33	.458	2	Gr. Shorthorn
	13	309	4913.7	4.02	197.54	15.90	.639	2	Gr. Holsetin
	14	300	5351.7	4.49	240.42	11.17	.801	8	Gr. Shorthorn
			66,886.0	2721.80					

Table No. 26

Herd No. 15 - Second Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B.fat	Av.Milk Per day	Av.fat Per day	Age	Breed
Best Cow	9	330	6993.9	5.04	352.84	21.19	1.069	4	Gr. Shorthorn
Poorest Cow	12	299	4913.3	3.98	195.61	16.43	.654	3	Gr. Shorthorn
Av. of Herd		302	5986.9	4.19	251.17	19.82	.831	6.5	
1		302	6838.8	4.51	308.77	22.64	1.024	5	Gr. Shorthorn
2		305	5627.6	3.49	196.66	18.45	.644	9	Gr. Shorthorn
3		300	6199.3	4.39	272.30	20.66	.907	6	Gr. Shorthorn
4		255	5544.2	3.68	204.04	21.74	.800	5	Gr. Jersey
7		281	6060.2	3.79	230.24	21.56	.819	4	Gr. Shorthorn
8		340	6568.7	3.74	245.97	19.31	.723	4	Gr. Shorthorn
9		330	6993.9	5.04	352.84	21.19	1.069	4	Gr. Shorthorn
10		345	5052.4	3.92	198.39	14.64	.575	3	Gr. Shorthorn
11		293	6310.0	5.04	318.57	21.53	1.087	6	Gr. Jersey
12		299	4913.3	3.98	195.61	16.43	.654	3	Gr. Shorthorn
13		329	6639.4	4.42	293.98	20.18	.893	3	Gr. Holstein
14		275	5278.3	4.13	218.28	19.44	.793	9	Gr. Shorthorn
15		280	5804.4	3.95	229.56	20.73	.819	10	Gr. Shorthorn
			77,830.5	3265.21					

Herd No. 15

This herd was owned by a progressive farmer who made milk production an incident rather than the main part of his operations. He appreciated the call of the local pasteurizing plant for milk, and in the absence of well bred dairy cows, was forced to use such as were available. Most of the cows were grade shorthorns lacking in dairy form. The first year's production was low, the average yield per cow being 5145 pounds milk and 209.36 pounds butter fat. During the second year with practically the same herd the average yield was raised to only 5986.9 pounds milk and 251.17 pounds butter fat. This illustrates quite well the futility of trying to obtain liberal milk or butter fat production from cows disposed to use their food for other purposes. They were, in the general acceptance of the term, dual-purpose cattle. The dual purpose enthusiast, if he will compare this herd with herds 3, 6 or 24, may perhaps see why it is that the special purpose dairy cow is essential to the best interests of a dairyman. The bull in use was a grade shorthorn closely related to several members of the herd. Recently, however, a pure-bred dairy bull has been placed at the head so that better production may be confidently expected.

Table No. 27

Herd No. 16 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B. fat	Av. Milk Per day	Av. fat Per day	Age	Breed
Best Cow	9	326	5292.6	4.49	237.64	14.82	.605	5	Jersey
Poorest Cow	6	334	3751.5	4.00	150.01	15.31	.612	3	Gr. Shorthorn
Av. of Herd		314	4607.5	3.98	183.52	14.55	.641		
1		331	4271.9	3.68	157.11	12.49	.459	12	Gr. Shorthorn
2		329	3929.2	3.56	139.93	11.94	.425	14	Gr. Shorthorn
3		284	4988.0	3.85	192.07	16.85	.648	12	Gr. Shorthorn
4		292	4153.8	3.74	155.71	13.14	.492	7	Gr. Shorthorn
5		323	5627.5	3.56	200.56	16.35	.583	6	Gr. Shorthorn
6		334	3751.5	4.00	150.01	15.31	.612	3	Gr. Holstein
7		329	4215.3	4.89	206.19	12.32	.602	3	Gr. Shorthorn
9		326	5292.6	4.49	237.64	14.82	.665	5	Jersey
10		284	5237.9	4.05	212.60	17.91	.727	14	Gr. Shorthorn
41,467.7				1651.82					

Table No. 28

Herd No. 16 - Second Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B.fat	Av.Milk Per day	Av.fat per day	Age Breed
Best Cow	15	365	8265.8	4.47	360.02	22.64	.986	Gr.Holstein
Poorest Cow	1	216	2895.4	3.53	102.47	13.40	.474	13 Gr.Shorthorn
Av.of Herd		284	5114.0	3.66	187.63	17.95	.658	
	1	216	2895.4	3.53	102.47	13.40	.474	13 Gr.Shorthorn
	3	292	6840.3	3.72	254.94	23.42	.873	13 Gr.Shorthorn
	4	291	3945.3	3.17	125.24	13.55	.430	8 Gr.Shorthorn
	5	256	3019.3	3.56	107.72	11.79	.420	7 Gr.Shorthorn
	6	307	3527.3	4.00	141.34	11.49	.460	4 Gr.Shorthorn
	7	290	3974.2	3.78	150.32	13.70	.518	4 Gr.Shorthorn
	8	255	2620.3	4.48	117.41	10.27	.460	6 Jersey
	11	216	4900.9	3.37	165.51	22.63	.766	7 Gr.Holstein
	12	214	3702.7	4.46	165.66	17.30	.774	6 Gr.Holstein
	13	327	5846.3	3.00	175.65	17.87	.537	6 Gr.Holstein
	14	351	7609.2	3.47	264.72	21.67	.754	7 Gr.Holstein
	15	365	8265.3	4.47	360.02	22.64	.986	6 Gr.Holstein
	16	330	5443.7	3.75	204.49	16.49	.619	6 Gr.Holstein
	17	282	6016.8	3.55	213.64	21.33	.757	7 Gr.Holstein
	18	260	5282.3	4.03	212.93	20.31	.818	7 Gr.Holstein
	19	319	6664.3	3.35	213.67	20.89	.669	6 Gr.Holstein
	20	272	6384.2	3.35	214.02	23.47	.786	6 Gr.Holstein
			86,939.3		3189.75			

Herd No. 16

With one exception the nine cows making up this herd during the first year were grade shorthorns. Their average production was 4607.5 pounds of milk and 183.52 pounds of butter fat. The Jersey was the best producer of butter fat, yielding 237.34 pounds while the best shorthorn produced only 212.6 pounds of butter fat. After testing for a year the owner decided that these cows were too poor to use in grading up. He set his standard at 10,000 pounds of milk per year and accordingly proceeded to buy grade cows of good dairy breeding. During the second year he retained seven of the nine cows in the original herd and compared their production with ten grade dairy cows which he had purchased. The average production of butter fat per cow during the second year was slightly less than during the first year. This decline was due to the poor performance of the cows from the original herd as their average yield was only 142.72 pounds, while the new animals averaged 219.03 pounds of butter fat their first year. This fact is not observed, however, unless the individual record of each cow is studied during the second year. Instead of being a poorer herd, it was a better herd the second year than during the first.



Herd No.16

Second Year.



Herd No. 16, Cow No. 20

Years Record at six years of age.

Milk 6384.2 pounds - Butter Fat 214.02 pounds.

Table No. 29

Herd No. 17 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B.fat	Av.Milk Per day	Av.fat Per day	Age	Breed
Best Cow	3	228	4264.0	5.10	217.56	18.70	.954	5	Gr. Shorthorn
Poorest Cow	10	246	3710.4	3.33	123.53	15.08	.502	2	Gr. Jersey
Av. of Herd		254	4354.6	3.96	172.64	17.11	.678		
	1	260	4088.1	4.16	170.11	15.72	.654	6	Gr. Jersey
	2	199	3749.1	4.76	178.30	18.33	.398	9	Gr. Shorthorn
	3	228	4264.0	5.10	217.56	18.70	.954	5	Gr. Shorthorn
	4	284	4626.9	3.96	183.37	16.32	.645	6	Gr. Jersey
	7	274	6114.5	3.31	202.70	22.31	.739	9	Gr. Herford
	9	290	3929.6	3.36	132.46	13.55	.456	6	Gr. Holstein
	10	246	3710.4	3.33	123.53	15.08	.502	2	Gr. Jersey
			30,482.60		1208.53				

Herd No. 17

Little need be said concerning this herd as its record indicates very plainly its value. The cows were of poor quality and the management not such as to stimulate them to liberal production. It is doubtful if even good care could have induced liberal production from such cattle.

Table No. 30
Herd No. 19 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B. fat	Av. Milk Per day	Av. fat Per day	Age	Breed
Best Cow	4	322	6412.7	4.57	292.82	19.91	.909	8	Gr. Jersey
Poorest Cow	15	308	4529.3	3.49	158.07	14.70	.513	9	Gr. Jersey
Av. of Herd		329	5409.6	4.11	242.94	16.48	.730		
	1	301	4941.7	4.39	231.76	16.41	.769	7	Gr. Jersey
	2	282	5616.6	3.34	204.11	19.38	.718	7	Gr. Jersey
	3	365	5807.3	4.14	240.72	15.91	.659	6	Gr. Jersey
	4	322	6412.7	4.57	292.82	19.91	.909	8	Gr. Jersey
	5	316	4798.4	4.01	192.34	15.18	.608	8	Gr. Jersey
	6	305	6186.1	4.52	279.34	20.24	.916	8	Gr. Jersey
	7	333	5181.4	4.16	215.60	15.53	.676	8	Gr. Jersey
	8	329	6435.7	4.16	267.73	19.56	.813	8	Gr. Jersey
	9	334	4836.3	4.36	237.22	14.48	.710	8	Gr. Jersey
	10	338	5474.2	4.59	251.38	16.19	.743	9	Gr. Jersey
	12	341	6057.0	4.30	278.79	17.76	.817	12	Gr. Jersey
	13	343	5926.4	4.41	261.16	17.27	.761	9	Gr. Jersey
	14	347	5088.5	4.76	242.20	14.36	.697	9	Gr. Jersey
	15	308	4529.3	3.49	158.07	14.70	.513	9	Gr. Jersey
	16	303	5195.0	4.59	238.65	17.14	.787	8	Reg. Jersey
	17	360	5506.6	5.07	279.30	15.29	.776	6	Gr. Jersey
	18	337	3160.3	6.34	190.34	9.37	.564	4	Reg. Jersey
	19	336	5201.5	5.07	263.78	15.48	.785	3	Reg. Jersey
	20	330	6427.3	4.51	290.06	19.47	.878	7	Gr. Jersey
			102,783.7	4615.87					

Table No. 31

Herd No.19 - Second Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B.fat	Av.Milk Per day	Av.fat Per day	Age	Breed
Best Cow	12	301	7497.3	4.69	352.12	24.90	1.169	11	Gr. Jersey
Poorest Cow	14	350	3740.4	4.50	168.56	10.68	.481	10	Gr. Jersey
Av. of Herd		330	5937.9	4.48	266.44	17.93	.304		
1	292		4739.5	4.34	229.50	16.23	.785	8	Gr. Jersey
2	303		5447.0	4.28	233.57	17.97	.770	8	Gr. Jersey
3	365		6536.3	4.40	288.00	17.90	.789	7	Gr. Jersey
4	324		6319.0	4.36	306.38	19.50	.947	9	Gr. Jersey
5	341		6035.8	4.12	249.33	17.70	.732	9	Gr. Jersey
6	291		5757.4	4.41	254.26	19.77	.873	9	Gr. Jersey
7	365		6372.5	4.32	275.72	17.45	.755	9	Gr. Jersey
8	365		6463.9	4.18	270.28	17.70	.740	7	Gr. Jersey
9	347		5798.9	4.86	281.90	19.71	.812	9	Gr. Jersey
10	324		5396.7	4.46	240.82	16.65	.743	10	Gr. Jersey
12	301		7497.3	4.69	352.12	24.90	1.169	11	Gr. Jersey
13	365		7273.2	3.99	290.70	19.92	.796	10	Gr. Jersey
14	350		3740.4	4.50	168.56	10.68	.481	10	Gr. Jersey
15	365		6137.3	3.33	224.76	16.81	.615	10	Gr. Jersey
16	353		5726.2	4.65	266.55	16.22	.754	9	Reg. Jersey
17	343		6512.8	4.48	302.28	18.98	.910	7	Gr. Jersey
18	266		3771.6	6.00	226.61	14.17	.851	5	Reg. Jersey
19	308		7400.7	4.68	346.51	24.02	1.125	4	Reg. Jersey
20	323		5893.9	4.31	253.66	18.24	.785	8	Gr. Jersey
			112,820.9		5062.51				

Herd No. 19

In many ways, this herd was surrounded with the most favorable conditions of any reported in this investigation. The housing and care of the herd was well provided for, but the feeding though fairly liberal was not adapted to the best interests of the herd. The production which shows a slight increase the second year over the first is above the average though not as high as one might expect from grade Jerseys. During the first year the average, for all cows, of 242.94 pounds of butter fat was surpassed the second year by 23.50 pounds per cow. The owner had been weighing his milk in the past, and was already provided with a high class Jersey bull.



Herd No. 19

First Year.



Herd No. 19

High Grade Heifers resulting from the use of a
Registered Jersey Bull.

Table No. 32

Herd No. 20 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B.fat	Av. Milk Per day	Av. fat Per day	Age	Breed
Best Cow	7	344	7529.5	3.93	296.07	21.88	.861	7	Gr. Jersey
Poorest Cow	11	224	2980.0	4.56	136.02	13.30	.607	8	Gr. Holstein
Av. of Herd		295	6106.3	3.84	235.04	20.68	.796		
	1	222	5515.2	3.63	200.20	24.84	.901	7	Gr. Jersey
	2	288	6661.2	3.97	264.42	23.12	.918	7	Gr. Jersey
	3	316	8652.6	3.31	286.44	27.38	.906	7	Gr. Jersey
	5	239	6789.5	3.84	260.97	28.40	1.091	4	Gr. Holstein
	6	316	6526.3	4.18	272.81	20.65	.863	4	Gr. Holstein
	7	344	7529.5	3.93	296.09	21.88	.861	7	Gr. Jersey
	8	309	6469.4	3.90	252.48	20.93	.817	9	Gr. Shorthorn
	9	337	5079.1	3.62	183.83	15.07	.545	4	Gr. Holstein
	10	323	6572.7	3.91	256.99	23.48	.795	8	Gr. Holstein
	11	224	2980.0	4.56	136.02	13.30	.607	8	Gr. Holstein
	12	286	7631.7	3.67	247.29	23.53	.864	5	Gr. Holstein
	14	316	5598.3	3.73	208.74	17.71	.660	4	Gr. Holstein
	15	342	4972.0	3.95	195.16	14.50	.570	4	Gr. Holstein
	16	239	5675.9	4.46	253.01	27.93	1.054	4	Gr. Holstein
	17	326	5842.5	3.61	211.15	17.92	.647	4	Gr. Jersey
			91,595.9		3525.60				

Herd No. 20

The apparent superiority of this herd over many others already mentioned is due primarily to the continued use of a pure-bred dairy sire. No exceptional effort had been made in the past to get and use the best bred sires available, yet males of good quality had been kept. Individual records had not been kept previously but cows that failed to milk rather liberally were removed without hesitation. In this way the herd was brought to its present condition. An average yield of 6106.3 pounds of milk and 235.04 pounds of butter fat is rather better than the average and shows what may be done by improving an inferior herd.

Table No. 33

Herd No. 21 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B. fat	Av. Milk Per day	Av. fat Per day	Age	Breed
Best Cow	7	365	8882.3	3.75	332.77	24.33	.911	4	Gr. Holstein
Poorest Cow	11	253	4025.1	3.55	142.12	15.90	.565	6	Gr. Holstein
Av. of Herd		292	5970.9	4.06	242.87	20.39	.829		
1	311	6524.5	4.23	279.22	20.97	.379		6	Gr. Holstein
2	262	5446.0	4.53	254.72	20.78	.972		5	Gr. Holstein
3	324	8390.0	3.91	328.12	25.39	1.012		6	Gr. Holstein
4	340	6498.6	4.37	284.02	19.11	.835		6	Gr. Holstein
5	196	3644.4	4.09	149.00	18.59	.760		7	Gr. Holstein
6	317	7613.1	3.78	287.80	24.01	.907		4	Gr. Shorthorn
7	365	8882.3	3.75	332.77	24.33	.911		4	Gr. Holstein
8	299	6418.6	4.10	263.35	21.46	.880		6	Gr. Jersey
9	289	5471.1	4.51	246.70	18.93	.353		7	Gr. Holstein
10	280	4877.4	3.37	188.57	17.41	.673		11	Gr. Shorthorn
11	253	4025.1	3.55	143.12	15.90	.565		6	Gr. Holstein
12	281	5501.3	4.31	224.53	19.57	.798		5	Gr. Holstein
13	315	5498.0	4.42	242.79	17.45	.770		5	Gr. Holstein
14	303	7355.7	3.65	269.27	24.27	.388		5	Gr. B. Swiss
17	256	3417.3	4.38	149.71	13.35	.584		4	Gr. Shorthorn

89,563.9

3643.69

Table No. 34

Herd No. 21 - Second Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B.fat	Av.Milk Per day	Av.fat Per day	Age	Breed
Best Cow	6	346	9740.2	3.8	370.12	28.14	1.069	5	Gr. Shorthorn
Poorest Cow	2	191	2645.9	4.7	124.35	13.85	.651	6	Gr. Holstein
Av. of Herd		286	6401.5	4.13	264.67	23.04	.952		
1	195	3847.9	4.3	165.45	19.73	.848	7	Gr. Holstein	
2	191	2645.9	4.68	124.35	13.85	.651	6	Gr. Holstein	
3	315	8315.4	3.9	324.30	26.39	1.029	7	Gr. Holstein	
4	237	4967.7	4.4	218.57	20.96	.922	7	Gr. Holstein	
6	346	9740.2	3.8	370.12	28.14	1.069	5	Gr. Shorthorn	
7	317	8433.1	3.8	320.45	26.30	1.010	5	Gr. Holstein	
8	317	8627.9	4.1	353.74	20.90	1.115	7	Gr. Jersey	
9	233	4938.0	4.6	222.21	21.18	.953	8	Gr. Holstein	
10	240	4860.3	3.9	189.55	20.25	.789	12	Gr. Shorthorn	
11	284	5562.9	3.6	194.70	19.58	.685	7	Gr. Holstein	
12	306	7607.1	4.9	365.14	24.85	1.193	6	Gr. Holstein	
13	290	6603.2	4.5	330.54	22.76	1.139	6	Gr. Holstein	
14	350	7070.6	3.7	261.61	20.20	.747	6	Gr. B. Swiss	
			83,220.1	3440.73					

Herd No. 21

From this grade Holstein herd a two years record has been obtained in which the second year shows considerable increase in average production over the first. In each case the herd was composed of nearly the same animals which points to the conclusion that they received better attention the second year. Like herd No. 20, this one was kept to produce milk for direct consumption and had accordingly been improved through grading and removals. In connection with this increase of 21.3 pounds of butter fat per cow the second year, should be noted the fact that an improved sire is in use.



Herd No. 21, Second Year



Cow No. 7	---	Herd No. 21	---	Cow No. 11
Milk		8882.3 pounds		4025.1 Pounds
Butter Fat		332.77 pounds		143.12 Pounds

Table No. 35

Herd No. 23 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B. fat	Av. Milk Per day	Av. fat Per day	Age	Breed
Best Cow	24	234	4337.2	4.96	215.55	18.53	.921	7	Gr. Jersey
Poorest Cow	26	338	1845.8	4.24	78.34	5.46	.237	2	Native
Av. of Herd		245	3314.1	4.28	142.05	13.43	.576		
1	207	2399.4	4.64	111.34	11.59	.537	2	Jersey	
2	236	2577.3	3.26	84.04	10.92	.356	2	Jersey	
3	236	3495.2	4.22	147.69	14.31	.625	2	Gr. Jersey	
4	234	3521.1	4.75	167.30	15.04	.714	5	Gr. Jersey	
5	258	3019.7	4.70	141.95	11.70	.550	4	Gr. Jersey	
6	225	3804.5	4.92	187.37	14.91	.734	5	Jersey	
7	230	2933.7	4.54	133.21	12.75	.579	6	Gr. Jersey	
8	232	2903.9	5.21	151.57	12.51	.653	2	Jersey	
9	246	3931.5	3.66	144.02	15.98	.585	8	Holstein	
10	230	3222.8	4.00	129.11	14.01	.561	8	Gr. Jersey	
11	249	3654.0	4.07	148.76	14.37	.597	5	Jersey	
12	246	3496.3	4.75	166.36	14.21	.676	5	Gr. Holstein	
13	227	4249.7	4.19	178.10	18.71	.784	5	Gr. Jersey	
14	365	3543.2	4.42	156.64	9.70	.429	6	Gr. Jersey	
15	206	3154.4	4.31	145.35	15.79	.708	2	Native	
16	251	3016.9	3.93	118.84	12.19	.473	2	Gr. Holstein	
18	233	3004.2	4.00	120.27	12.39	.516	4	Native	
19	249	4336.0	3.23	140.37	17.41	.563	6	Holstein	
20	213	3320.9	4.09	135.95	15.59	.638	5	Gr. Jersey	
21	273	4187.3	4.43	185.76	15.33	.680	5	Gr. Jersey	
22	206	3114.1	4.28	133.48	15.11	.647	5	Gr. Jersey	
23	239	3190.8	3.94	125.31	13.35	.526	4	Native	
24	234	4337.2	4.96	215.55	18.53	.921	7	Gr. Jersey	
25	276	2594.2	4.23	109.77	9.39	.397	4	Angus	
26	338	1845.8	4.24	78.34	5.46	.237	2	Native	
			82,854.6	3557.45					

Table No. 36

Herd No. 23 - Second Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B. fat	Av. Milk Per day	Av. fat Per day	Age	Breed
Best Cow	24	308	4611.9	4.76	219.34	14.97	.713	8	Gr. Jersey
Poorest Cow	2	225	2828.5	3.35	95.04	12.57	.422	3	Jersey
Av. of Herd		245	3406.5	4.16	141.31	13.90	.578		
1	211	3051.8	3.53	107.76	14.46	.510	3	Jersey	
2	225	2828.5	3.35	95.04	12.57	.422	3	Jersey	
3	208	3297.0	3.70	123.99	11.04	.596	3	Gr. Jersey	
4	218	3309.8	4.18	138.60	15.17	.635	6	Gr. Jersey	
5	315	3531.4	4.93	174.31	11.21	.553	5	Gr. Jersey	
6	218	3304.5	4.55	150.44	15.15	.690	6	Jersey	
7	218	3850.3	3.19	123.00	17.66	.564	7	Gr. Jersey	
8	244	3260.4	5.51	179.94	13.36	.737	3	Jersey	
9	216	3411.8	3.41	116.65	15.79	.540	9	Holstein	
10	239	3113.5	4.14	129.02	13.02	.538	9	Gr. Jersey	
11	210	3361.7	3.90	1313.41	16.00	.625	6	Jersey	
12	292	3452.3	4.81	166.08	11.82	.568	6	Gr. Holstein	
13	260	4071.2	4.13	168.25	15.65	.647	6	Gr. Jersey	
14	236	3878.9	4.29	176.57	16.57	.748	7	Gr. Jersey	
15	259	3773.5	4.22	160.25	14.56	.618	3	Native	
16	237	3256.2	3.93	128.18	13.73	.540	3	Gr. Holstein	
17	190	2816.7	5.03	141.90	14.82	.746	6	Native	
18	237	2786.2	3.94	109.83	11.75	.463	5	Native	
19	265	4261.4	2.98	126.99	16.08	.479	7	Holstein	
20	260	3252.4	4.36	142.07	12.50	.546	6	Gr. Jersey	
21	258	3827.4	4.26	126.25	14.83	.632	6	Gr. Jersey	
22	242	3616.0	4.08	147.89	14.94	.610	6	Gr. Jersey	
23	206	2325.6	4.54	105.80	11.28	.514	5	Native	
24	308	4611.9	4.76	219.84	14.97	.713	8	Gr. Jersey	
25	309	3771.5	3.96	149.57	12.20	.484	5	Angus	
27	290	3239.8	3.97	128.69	11.18	.443	3	Shorthorn	
28	244	2713.8	4.55	123.60	11.12	.506	6	Gr. Shorthorn	
			91,975.50	3828.92					

Herd No. 23

On the basis of butter fat production, this is the poorest herd studied. The low production is due not only to the absense of dairy ability in the cows, but also to a failure on the part of the owner to supply their wants. He recognized the quality of his herd but preferred to produce the milk largely from pasture, wintering the herd on red-top hay (well threshed) and corn stover. The argument advanced was that by having cheap cows and cheap pasture, the production in summer was clear gain as the cost to winter the cattle was insignificant. The best cow produced only 215.55 pounds of butter fat while the poorest yielded only 78.34 pounds during the first year. Only the most primitive conditions would seem to justify the retention of such animals. During the second year the best and poorest cows made larger production than those of the first year, the average production for the second year, however, was slightly less than in the first.



Two Views of Herd No. 23, the Poorest herd Studied



First Crop of Calves from Herd No. 23, after using
an Improved Dairy Sire



Cow No. 24

Best in Herd No. 23.

Milk 4611.9 pounds - Butter Fat 219.34 pounds

Table No. 37

Herd No. 24 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B.fat	Av.Milk Per day	Av.fat Per day	Age	Breed
Best Cow	1	317	6911.4	6.91	477.30	21.80	1.50	6	Jersey
Poorest Cow	9	119	3477.6	4.64	161.46	29.22	1.35	15	Angus
Av. of Herd		280	5921.4	5.91	350.17	21.10	1.25		
	1	317	6911.4	6.91	477.30	21.80	1.50	6	Jersey
	2	337	6746.8	6.00	405.00	20.02	1.20	7	Gr. Jersey
	3	288	6734.1	6.38	429.70	23.37	1.49	6	Gr. Holstein
	4	323	7349.1	5.58	410.35	22.75	1.28	7	Gr. Jersey
	5	294	6739.7	6.19	416.93	22.92	1.41	8	Jersey
	6	272	5485.0	4.85	266.00	20.16	.97	8	Gr. Shorthorn
	7	307	5562.1	5.63	313.44	18.11	1.02	11	Gr. Shorthorn
	8	263	4286.9	6.33	281.40	16.30	1.03	15	Gr. Shorthorn
	9	119	3477.6	4.64	161.46	29.22	1.35	15	Gr. Angus
			53,292.7		3151.58				

Table No. 38

Herd No. 24 - Second Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B.fat	Av.Milk Per day	Av.fat Per day	Age	Breed
Best Cow	4	343	6802.3	5.50	374.72	19.83	1.09	8	Gr. Jersey
Poorest Cow	10	280	4591.8	5.14	237.19	16.39	.84	16	Gr. Angus
Av. of Herd		302	6225.5	4.88	303.93	20.56	1.00		
	1	324	6991.9	4.66	326.48	21.57	1.00	7	Jersey
	2	353	6957.5	4.81	334.89	19.70	.84	8	Gr. Jersey
	3	327	7587.8	4.78	362.80	23.30	1.10	7	Gr. Holstein
	4	343	6802.3	5.50	374.72	19.83	1.09	8	Gr. Jersey
	5	243	4603.5	5.10	237.97	18.94	.97	9	Jersey
	6	262	6786.1	4.37	296.54	25.90	1.18	9	Gr. Shorthorn
	7	290	5486.9	4.75	260.92	18.92	.89	12	Gr. Shorthorn
	10	280	4591.8	5.14	237.19	16.39	.84	16	Gr. Angus
			49,707.8		2431.51				

Herd No. 24

Although small in numbers, the first years performance of this herd showed a larger average yield than any other herd studied, except herd No. 27. Five cows of the nine yielded more than 400 pounds of butter fat, one reaching 477.3 pounds. The average production during the first year was 5921.41 pounds of milk and 350.17 pounds of butter fat. During the second year a marked decline in production is noted which, aside from the influence of a drouth upon pasture and food supplies, cannot be explained. The cows were selected upon their evidences of dairy production and the accuracy of the owners judgment is shown by their performance.



Herd No. 24, Second Year



Cow No. 2 - Herd No. 24

Milk 6746.3 pounds - Butter Fat 405.0 pounds.

Table No. 39

Herd No. 27 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B. Fat	Av. Milk Per day	Av. fat Per day	Age	Breed
Best Cow	35	365	9238.5	5.41	490.08	25.39	1.342	4	Reg. Jersey
Poorest Cow	7	232	2325.8	4.77	111.08	10.02	.483	6	Reg. Jersey
Av. of Herd		309	6145.9	5.22	321.42	19.85	1.038		
	3	290	8319.7	5.49	457.91	28.26	1.564	9	Reg. Jersey
	5	296	5035.0	5.42	272.90	17.01	.921	8	Reg. Jersey
	6	296	6872.9	5.20	357.46	23.21	1.207	4	Reg. Jersey
	7	232	2325.8	4.77	111.08	10.02	.483	6	Reg. Jersey
	8	294	5826.2	5.37	313.38	19.81	1.065	8	Reg. Jersey
	9	294	4714.8	5.20	245.39	16.03	.834	8	Reg. Jersey
	10	259	6127.3	4.80	294.63	23.65	1.137	8	Reg. Jersey
	12	365	7496.8	5.54	415.89	20.53	1.139	8	Reg. Jersey
	14	365	7295.4	5.01	366.00	19.98	1.002	8	Reg. Jersey
	15	292	7285.6	4.87	355.38	24.95	1.217	8	Reg. Jersey
	16	294	6314.0	5.37	339.32	21.47	1.154	6	Reg. Jersey
	17	365	8339.1	5.53	461.20	22.84	1.263	5	Reg. Jersey
	18	309	7116.0	5.61	399.22	23.02	1.292		
	19	257	4841.8	6.05	293.27	18.33	1.141	6	Reg. Jersey
	20	305	7040.7	5.51	388.21	23.08	1.272	9	Reg. Jersey
	21	306	6072.2	5.47	332.65	19.34	1.087	5	Reg. Jersey
	22	275	5103.9	6.41	327.44	18.55	1.190	5	Reg. Jersey
	23	341	8207.2	5.73	470.78	24.06	1.380	5	Reg. Jersey
	25	337	7109.0	5.11	363.74	21.09	1.079	8	Reg. Jersey
	29	297	4667.7	5.54	258.60	15.71	.872		
	30	306	4594.0	5.59	256.38	15.01	.339	7	Reg. Jersey
	32	275	4553.9	5.79	263.99	16.55	.996	5	Reg. Jersey
	34	323	6321.3	5.62	355.39	19.57	1.101	5	Reg. Jersey
	35	365	9238.5	5.41	490.08	25.39	1.342	4	Reg. Jersey
	36	317	5689.3	4.69	266.91	17.98	.841	6	Reg. Jersey
	38	344	5776.1	5.44	314.59	16.79	.914	6	Reg. Jersey
	39	305	8644.9	4.17	361.26	28.34	1.184	11	Reg. Jersey
	41	331	7088.9	4.28	304.20	21.41	.918	5	Reg. Jersey
	44	280	4510.1	4.65	209.77	16.10	.749	10	Reg. Jersey
	45	287	8906.3	4.57	407.61	31.03	1.420	9	Reg. Jersey
	48	305	6522.3	4.96	323.78	21.38	1.061	7	Reg. Jersey
	51	268	4111.2	6.07	249.30	15.34	.932	8	Reg. Jersey
	52	274	4123.4	6.72	277.38	15.04	1.012	6	Reg. Jersey
	53	318	7603.5	4.99	380.07	23.91	1.195	8	Reg. Jersey
	54	336	8083.2	5.87	474.52	24.05	1.411	9	Reg. Jersey

Herd No. 27 - First Year (Continued)

No. of Cow	Days in Milk	Total Milk	Av. Test	Total B.fat	Av. Milk Per day	Av. fat Per day	Age	Breed
55	346	6192.0	5.07	314.45	17.39	.908	5	Reg. Jersey
56	365	7275.6	5.59	407.26	19.93	1.116		
57	344	5995.5	4.90	294.05	17.42	.854	7	Reg. Jersey
60	297	3846.9	5.36	206.47	12.98	.695		
61	355	5952.3	6.78	404.14	16.73	1.138	5	Reg. Jersey
63	299	5725.5	5.78	330.06	19.14	1.103	5	Reg. Jersey
64	340	4588.4	4.91	225.41	13.49	.662	5	Reg. Jersey
65	324	4500.3	5.44	245.01	13.89	.756		
90	249	4303.2	4.98	214.45	17.28	.861		
101	281	4997.3	4.86	243.10	17.78	.864		
102	330	5820.6	4.98	290.38	17.63	.879	6	Reg. Jersey
103	354	5891.5	4.86	286.20	16.64	.808		
104	292	6769.5	3.42	231.68	23.18	.793	8	Reg. Jersey
105	310	6412.3	4.99	320.08	20.68	1.032	5	Reg. Jersey
106	365	7292.2	5.15	375.76	19.97	1.029		
109	268	4958.3	5.61	278.60	18.50	1.039	6	Reg. Jersey
111	330	8550.3	4.23	362.21	25.91	1.097		

325,736.4

17035.61



Table No. 40

Herd No. 27 - Second Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B.fat	Av. Milk Per day	Av. fat Per day	Age	Breed
Best Cow	48	350	11184.3	5.33	600.30	31.25	1.716	8	Reg. Jersey
Poorest Cow	125	290	4825.5	4.63	223.43	16.63	.770		
Av. of Herd		322	7577.7	5.23	396.69	23.51	1.127		
3	291		8515.3	5.28	450.47	29.26	1.547	10	Reg. Jersey
5	273		5536.0	5.23	289.17	20.27	1.059	9	Reg. Jersey
6	365		8479.3	5.18	440.75	23.23	1.207	5	Reg. Jersey
14	303		8085.2	4.70	380.17	26.68	1.254	9	Reg. Jersey
15	317		6415.9	4.91	315.34	20.23	.995	9	Reg. Jersey
19	329		6521.3	6.08	396.88	19.32	1.206	7	Reg. Jersey
20	338		8645.6	5.30	458.79	25.58	1.357	10	Reg. Jersey
21	291		6877.0	5.35	368.48	23.63	1.266	6	Reg. Jersey
22	304		8236.9	5.40	445.47	27.09	1.465	6	Reg. Jersey
25	331		10937.4	4.85	530.72	33.04	1.303	9	Reg. Jersey
30	268	1142	4928.9	4.96	244.57	18.39	.912	8	Reg. Jersey
35	326		7687.0	5.34	410.74	23.58	1.259	5	Reg. Jersey
39	338	7956.7	7819.2	4.28	335.12	23.13	.991	12	Reg. Jersey
41	333		7020.3	4.30	323.34	21.08	.970	6	Reg. Jersey
45	365	537.7	9747.0	4.94	482.50	26.70	1.321	10	Reg. Jersey
48	350		11184.6	5.33	600.30	31.95	1.716	8	Reg. Jersey
51	315		4903.5	5.02	246.41	15.56	.782	9	Reg. Jersey
53	365	5482	9552.4	5.46	542.16	28.17	1.485	9	Reg. Jersey
54	353		8280.6	6.26	518.91	23.46	1.470	10	Reg. Jersey
55	301		6558.3	5.16	338.91	21.79	1.125	6	Reg. Jersey
61	365		7442.2	6.06	469.34	20.33	1.287	6	Reg. Jersey
63	296		5693.7	5.86	334.14	19.23	1.128	6	Reg. Jersey
64	273		9772.5	4.37	476.54	35.79	1.745	6	Reg. Jersey
110	322		9048.0	4.59	416.14	28.09	1.292	7	Reg. Jersey
125	290		4825.5	4.63	223.43	16.63	.770	10	Reg. Jersey
126	328		7142.3	5.15	367.39	21.77	1.121	5	Reg. Jersey
127	313		5520.4	5.35	309.45	17.33	.988	4	Reg. Jersey
128	365		7392.3	5.60	414.14	20.25	1.134	8	Reg. Jersey
129	308		7872.9	5.38	432.72	22.01	1.375	6	Reg. Jersey
133	351		6690.1	5.16	345.48	19.06	.984	5	Reg. Jersey

227,333.5

11900.77

Herd No. 27

This excellent herd so far as the writer's information extends, is the best herd of Jersey cattle and perhaps the best dairy herd of any breed in Illinois. The cattle are all registered and the owners never add to the herd except with the intention of improvement. It is almost needless to say that the best sires are kept in service. The stables are comfortable and sanitary. The food is the best that can be provided and the rations are compounded and administered by perhaps the most skillful feeder known to Jersey breeders. His knowledge of the needs of particular animals under his care is profound and the success he has had in developing large producers has given him a wide reputation. In other words nothing has been omitted that could reasonably induce the herd as individuals to do well. Food, care, and management have at all times been the best. Under such conditions with good animals large production would naturally be expected. The average production of those tested the first year is 6145.2 pounds of milk and 321.42 pounds of butter fat. The best cow yielded 490.08 pounds of butter fat. The owners desire a herd that will average 400 pounds of butter fat per year. The average production for the second year is 396.69 pounds of butter fat. This is a gratifying increase over the previous year and though not up to the standard set, it is practically as good. During the second year the best cow produced 11,184.3 pounds of milk containing 600.3 pounds of butter fat. That this is a highly profitable herd may be seen from the records. The output of the herd is produced and handled in a sanitary manner and consumed by a critical trade at an advanced price. For young stock, milk and cream, it paid the owner in gross returns more than \$14,000.00 during the past year.



Herd No. 27

Sire in Exercising Yard



Herd No. 27, in Barnyard



Herd No. 27 - Oenon Spanaldo Nettie 177526 A.J.C.C.

Milk 9772.50 pounds

Butter Fat 375.18 pounds



Herd No. 27 - May's Tantrum 177943 A.J.C.C.

Milk 8236.9 pounds

Butter Fat 445.47 pounds



Herd No. 27 - Cloudland Inez 154108 A.J.C.C.

Milk 7607.8 pounds

Butter Fat 375.18 pounds



Herd No. 27 - Lily Gordan 143317 A.J.C.C.

Milk 7087.7 pounds

Butter Fat 318.3 pounds

Table No. 41

Herd No. 28 - First Year

	No. of Cow	Days in Milk	Total Milk	Av. Test	Total B.fat	Av.Milk Per day	Av.fat Per day	Age	Breed
Best Cow	2	308	11700.2	3.19	373.36	37.98	1.213	7	Reg.Holstein
Poorest Cow	16	338	5751.4	3.31	190.76	17.01	.564	4	Gr.Holstein
Av. of Herd		316	8130.2	3.27	266.00	25.70	.841		
	1	356	8312.1	3.04	253.55	23.34	.710	5	Reg.Holstein
	2	308	11700.2	3.19	373.36	37.98	1.213	7	Reg.Holstein
	3	280	10894.2	2.79	304.31	38.39	1.088	7	Reg.Holstein
	4	299	7108.1	3.56	253.34	23.77	.847	8	Gr.Holstein
	6	291	6685.3	3.37	245.72	22.97	.844	7	Gr.Holstein
	10	293	6111.7	3.53	216.16	20.85	.737	7	Gr.Holstein
	15	365	8478.3	3.41	289.33	23.23	.793	10	Reg.Holstein
	16	338	5751.4	3.31	190.76	17.01	.564	4	Gr.Holstein
			65,042.3		2128.3				

Herd No. 28

This herd was owned by a dairyman who was just beginning to supply milk for the local condensory. He selected rather high class grade dairy cattle and provided a pure-bred sire of the same breed. His herd is profitable and shows what one may do by starting right with cows designed for the purpose at hand. The herd was well fed and comfortably stabled. The low production of some of the cows is doubtless due to their being purchased at a distance and brought to the farm at the beginning of the year.



Herd No. 28

Registered and Grade Holstein-Friesians



Herd No. 28

The Registered Holstein-Friesians

THE RESULTS

From the Tables that have been given in which the performance of the individual has been emphasized, it is evident that even in the best herds there is often a wide range in production between the best and poorest cows. The greatest difference in this respect appears in Herd No. 27. Most of the animals were of uniformly high capacity but an exceptionally good cow and a really inferior one, which had no place in the herd and perhaps should not have been included, account for this difference. Table No. 42 shows the variation in production between the best and poorest cows in the different herds together with the average yield in each herd. Plate No. 1 presents the same data graphically. The average yield of the best cows, is 331.13 pounds; of the poorest cows 154.62 pounds and the average of all cows tested is 242.28 pounds butter fat. The poorest cows in all herds average 88.85 pounds less than do the best ones, and the best cows average 88.85 pounds greater than the average of all the cows tested. The average of all the cows, 242.28 pounds, is 88.85 pounds less than the best and 87.66 pounds greater than the poorest. This shows that there must be a fairly even distribution in the scale of production from the poorest cow tested to the best one. However, a study of Plate No. 1 shows that the average in herds 7, 16, and 23 is nearest the lowest production, while in herds 1, 3, 6, 19, 21, 24 and 27 the average runs nearer the upper limit of production. The former are inferior herds while the latter are among the best so that it is safe to say that in the herds studied the average is more likely to approach the poorer cows in the poorer herds, and the better cows in the better herds.

Table No. 42

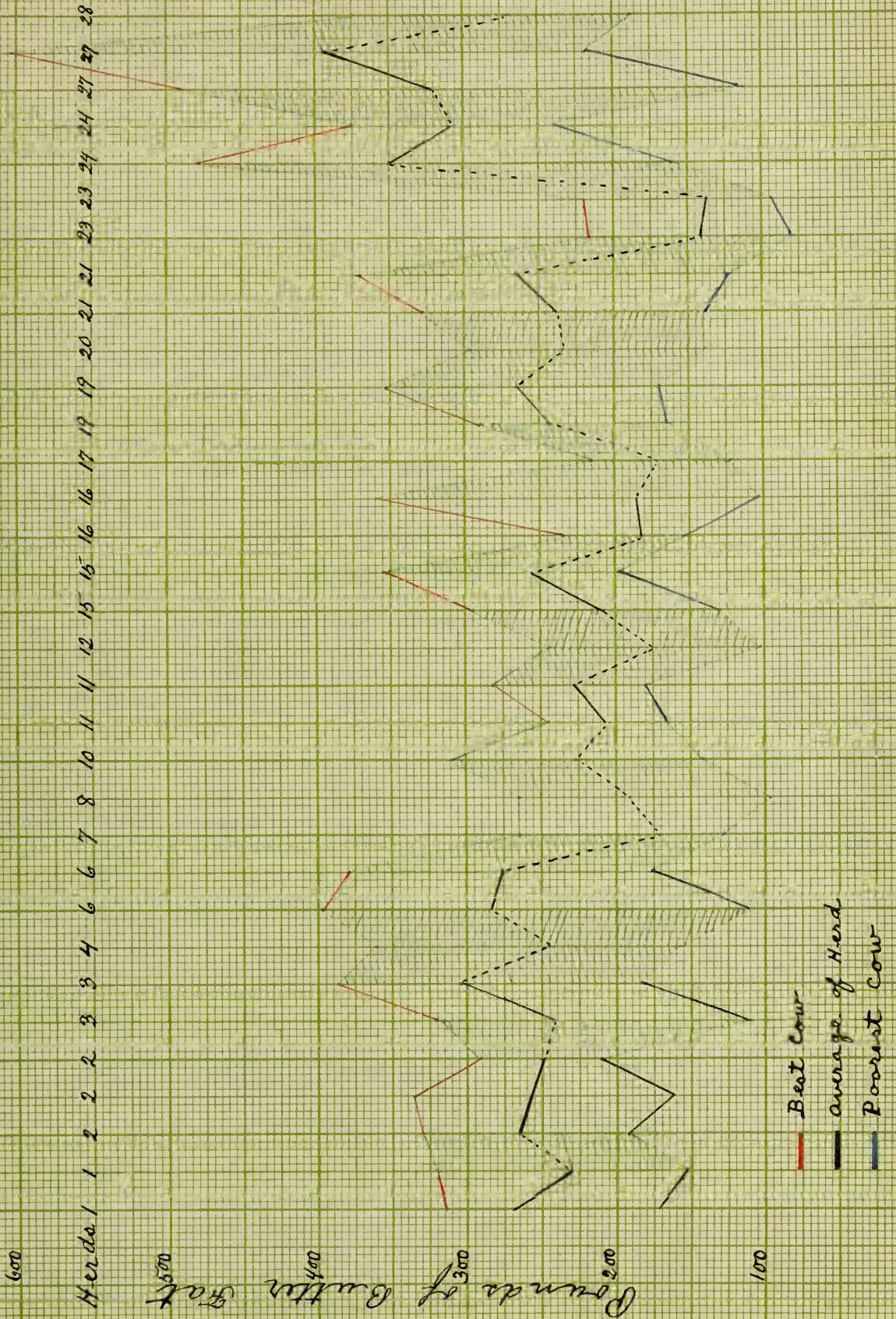
Showing the Production of the Best and Poorest Cow
and the Average in Each Herd

No. of Herd	Best Cow	Poorest Cow	Av. of Herd
1 - 1st year	315.38	171.37	265.38
1 - 2d year	317.96	152.23	229.72
2 - 1st year	333.35	193.29	267.75
2 - 2d year	335.29	158.24	256.61
2 - 3d year	292.10	208.33	250.31
3 - 1st year	324.08	112.88	244.93
3 - 2d year	287.86	187.34	301.66
4 - 1st year	358.59	156.71	242.32
6 - 1st year	399.47	211.38	285.21
6 - 2d year	381.72	177.35	273.33
7 - 1st year	264.01	128.96	170.49
8 - 1st year	263.42	97.17	192.51
10 - 1st year	314.96	168.48	227.31
11 - 1st year	246.70	167.56	205.03
11 - 2d year	281.41	176.17	229.21
12 - 1st year	248.36	101.05	175.41
15 - 1st year	298.57	135.29	209.36
15 - 2d year	352.84	196.61	251.17

Table No. 42 (Continued)

No. of Herd	Best Cow	Poorest Cow	Av. of Herd
16 - 1st year	237.64	150.01	183.52
16 - 2d year	360.02	102.47	187.63
17 - 1st year	217.56	123.53	172.64
19 - 1st year	292.82	158.07	242.94
19 - 2d year	352.12	168.56	266.44
20 - 1st year	296.07	136.02	235.04
21 - 1st year	332.77	142.12	242.87
21 - 2d year	370.12	124.35	264.67
23 - 1st year	215.55	78.34	142.05
23 - 2d year	219.84	95.04	141.81
24 - 1st year	477.30	161.46	350.17
24 - 2d year	374.72	237.19	303.93
27 - 1st year	490.08	111.08	321.42
27 - 2d year	600.80	223.43	396.69
28 - 1st year	373.86	190.76	266.00
Total	10,927.34	5,102.64	7,995.53
Average	331.13	154.62	242.28
Less than the best		176.51	88.85
Greater than the poorest	176.51		87.66

Plate No. 1

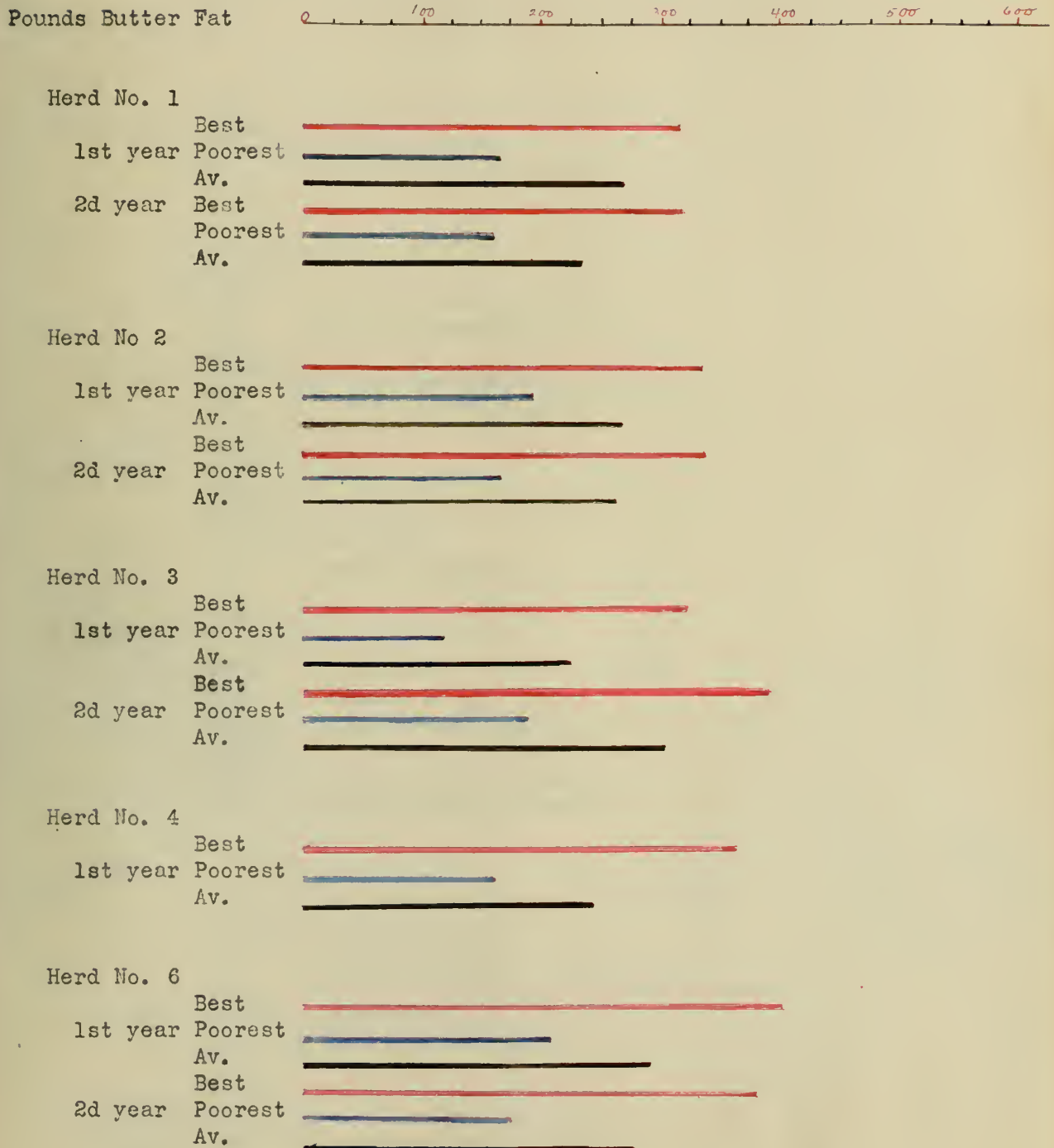


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CHART NO. 1

The Best and Poorest Cow in each Herd Compared with the average Production of the Herd each Year

It was Tested.



Pounds Butter Fat



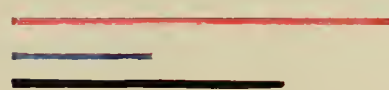
Herd No. 7

Best
1st year Poorest
Av.



Herd No. 8

Best
1st year Poorest
Av.



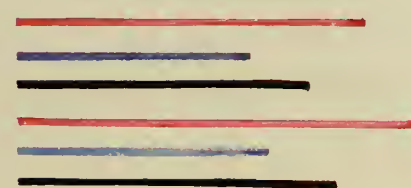
Herd No. 10

Best
1st year Poorest
Av.



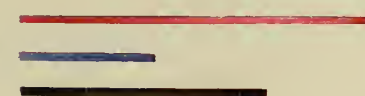
Herd No. 11

Best
1st year Poorest
Av.
Best
2d year Poorest
Av.



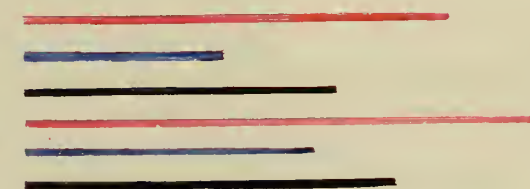
Herd No. 12

Best
1st year Poorest
Av.



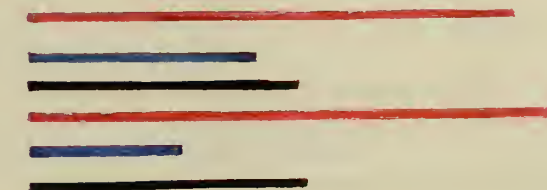
Herd No. 15

Best
1st year Poorest
Av.
Best
2d year Poorest
Av.



Herd No. 16

Best
1st year Poorest
Av.
Best
2d year Poorest
Av.

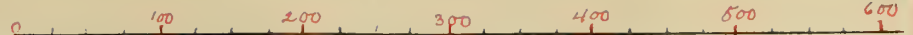


Herd No. 17

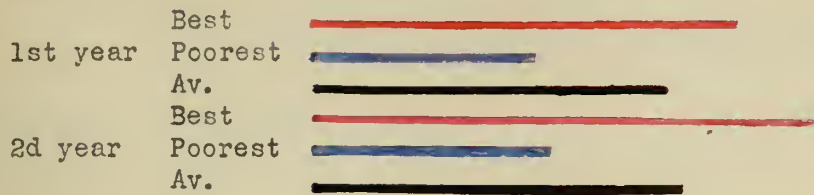
Best
1st year Poorest
Av.



Pounds Butter Fat



Herd No. 19



Herd No. 20



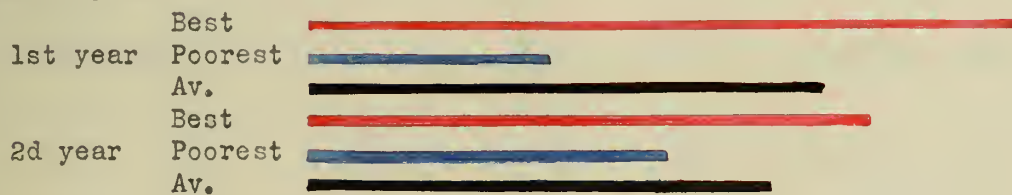
Herd No. 21



Herd No. 23



Herd No. 24



Herd No. 27



Herd No. 28



Table No. 43

The Best Ten Cows all Herds Included

Herd	No. of Cow	Days in Milk	Milk	Test	Butter Fat	Age	Breed
27	48	350	11,184.6	5.33	600.80	8	Reg. Jersey
27	53	365	9,552.4	5.46	542.16	9	Reg. Jersey
27	25	331	10,937.4	4.35	530.72	9	Reg. Jersey
27	54	353	8,280.6	6.26	518.91	10	Reg. Jersey
27	35	365	9,238.5	5.41	490.08	4	Reg. Jersey
27	45	365	9,747.0	4.94	482.50	10	Reg. Jersey
24	1	317	6,911.4	6.91	477.30	6	Gr. Jersey
27	64	273	9,772.5	4.87	476.54	6	Reg. Jersey
27	61	365	7,442.2	6.06	469.84	6	Reg. Jersey
27	17	365	8,339.1	5.53	461.20	5	Reg. Jersey
Average		334.9	9,140.57	5.52	505.00	7.3	
Daily Average			27.29		1.50		

Table No. 43

The Best Ten Cows Excluding Herd No. 27

Herd	No. of Cow	Days in Milk	Milk	Test	Butter Fat	Age	Breed
24	1	317	6911.4	6.91	477.30	6	Gr. Jersey
24	3	288	6834.1	6.38	429.70	6	Gr. Holstein
24	5	294	6739.7	6.19	416.91	8	Gr. Jersey
24	4	323	7349.1	5.58	410.35	7	Gr. Jersey
6	2	320	9067.0	4.41	399.47	7	Gr. Shorthorn
3	15	276	8118.1	4.77	387.86	3	Gr. Holstein
6	21	336	9448.6	3.83	381.72	7	Reg. Holstein
6	10	320	9725.7	3.85	374.77	8	Reg. Holstein
21	6	346	9740.2	3.80	370.12	5	Gr. Shorthorn
28	2	308	11700.2	3.19	373.86	7	Reg. Holstein
Average		312.8	8553.41	4.70	402.20	6.4	
Daily Average			27.34		1.28		

The best ten cows all herds included averaged 9140.57 pounds of milk containing 505 pounds of butter fat. Excluding Herd No. 27 the amount is 8553.41 pounds of milk containing 402.20 pounds butter fat. In the former case all the cows save one are from Herd No. 27 in which the best cow produced 600.8 pounds of butter fat. The average production also of Herd No. 27 was 396.99 pounds of butter fat per cow. However, if Herd No. 27, composed of superior Jerseys is excluded then we find animals from five different herds competing for first honors. Their average age is 6.4 years and the mean length of their lactation period is 312.8 days. In the former case with herd No. 27 included, the average age is 7.3 years and the lactation period 334.9 days. While in this case it would perhaps be too much to say that the large production was due to the increased age and length of lactation period, nevertheless, we find long lactation associated with liberal production.

In Table No. 44 the records of the poorest ten cows are shown. They range from 97.17 pounds of butter fat to 111.08 pounds. The average yield is 2587.75 pounds of milk containing 100.92 pounds of butter fat. The average age is 4.2 years and the length of lactation 236.6 days. The period of lactation of the poorest ten cows averages 98.3 days shorter than that of the best ten cows. Excluding Herd No. 27 on the basis of average production it takes four cows of the poorest ten to equal one of the best ten. Including Herd No. 27 it takes five to equal one of the best. The daily average yield of milk and butter fat in the two groups stands in about the same relation.

Table No. 44

The Poorest Ten Cows All Herds Included

Herd	No. of Cow	Days in Milk	Milk	Test	Butter fat	Age	Breed
23	26	338	1845.8	4.24	78.34	2	Native
23	2	236	2577.8	3.26	84.04	2	Gr. Jersey
16	1	216	2895.4	3.53	102.47	13	Gr. Shorthorn
8	7	167	2690.8	3.61	97.17		Native
12	7	197	2090.4	4.83	101.05		Native
16	5	256	3019.3	3.56	107.72	7	Gr. Shorthorn
23	18	237	2786.2	3.94	109.83	5	Native
23	25	276	2594.2	4.23	109.77	4	Angus
23	1	211	3051.8	3.53	107.76	3	Gr. Jersey
27	7	232	2325.8	4.77	111.08	6	Reg. Jersey
Average		236.6	2587.75	3.86	100.92	4.2	
Daily Average			10.93		.426		

Table No. 45

Average Production According to Groups

Group	Age	Days in Milk	Av. Milk	Av. B. Fat	No. of Records	Percent of Total records
Below 150 lb.	5.3	238.9	3254.24	126.80	59	12.34
150 - 250	6.5	291.5	5179.77	205.07	203	42.46
250 - 350	6.7	314.3	6985.87	291.73	158	33.05
350 - 450	6.8	324.3	7871.38	386.28	43	8.98
Above 450	7.7	336.3	8878.46	490.82	15	3.13
Total					478	

Plate No. 2

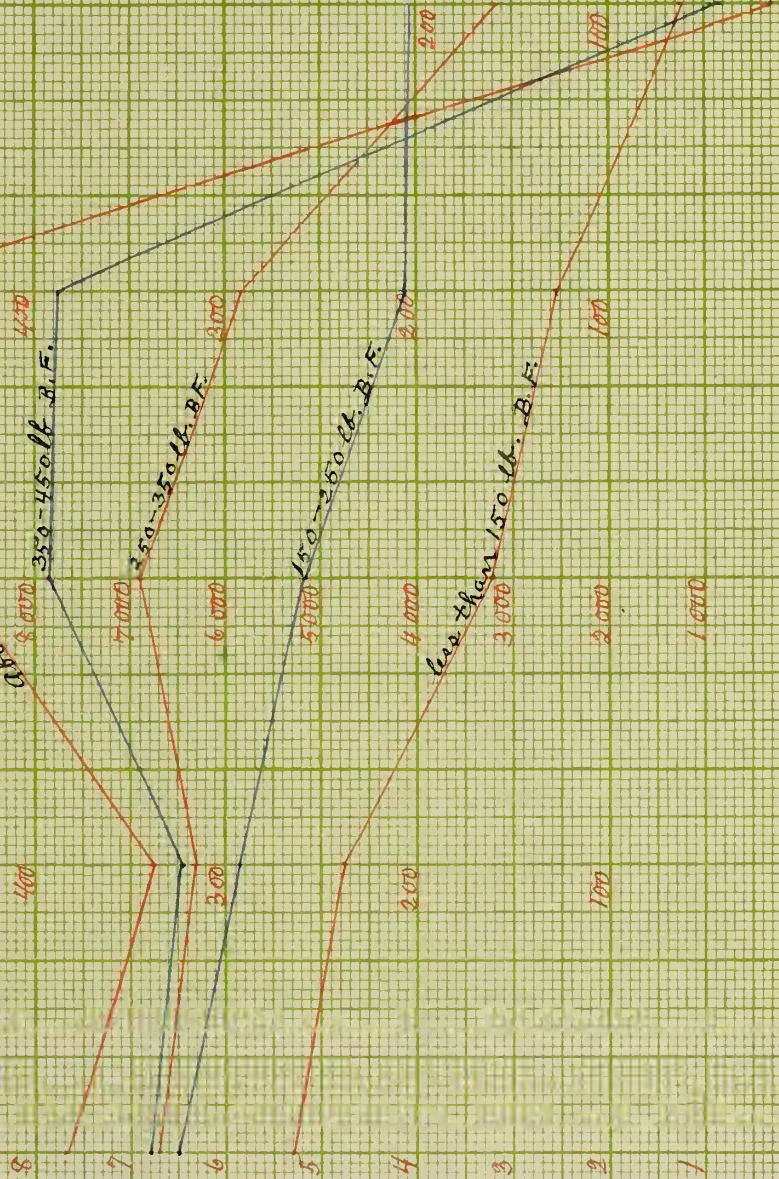
No. of records

av. B. Fat

av. milk

days in milk

age



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Financial Statement

In noting the production of the cows reported in this investigation, it is necessary to bear constantly in mind the fact that the herds studied are not representative of Illinois dairy herds. Poor cows are being kept for dairy purposes much more numerously than these Tables would indicate. In order to analyze the results more closely, the 478 annual records obtained were grouped according to production as summarized in Table No. 45. In addition the average age and length of lactation of the various groups is given. Plate No. 2 illustrates the same facts set forth in Table No. 45. With the increase in production we note an increase in age and a lengthening of the lactation period which accords with previous experiences. Financial considerations as between himself and the individual cows of the herd are so often overlooked by the dairyman that reference to them here will show the losses that the industry thus sustains. Some careful records of the food of various cows in the herds tested indicate that the annual cost to maintain a dairy cow on farms where they are stabled and well fed in winter and given pasture supplemented with grain in summer is \$45.00. In herds where little attention is given other than pasture in summer and hay with a small and inadequate grain ration in winter the cost does not exceed \$35.00. According to Table No. 45, fifty-nine cows yielded less than 150 pounds of butter fat. Obviously they were unprofitable, if the value of the butter fat is estimated at twenty-five cents a pound. By actual count 142 cows yielded less than 200 pounds of butter fat. As already stated fifty-nine of this number produced less than 150 pounds and of the remainder many did not far exceed this amount. In other words,

these 146 records show that upon the basis of twenty-five cents per pound for butter fat and the cost of food as already given, 33-1/3 per cent of the cows in the herds tested if not actually kept at a loss at least failed to pay the owner a profit.

In the State of Illinois the recent census shows that there are one million cows kept for dairy purposes. That they are of inferior quality has been repeatedly demonstrated. It is doubtful if one-fourth of this number are improved animals but for lack of definite knowledge upon this point which is impossible to obtain let us assume that such is the case. Granting this, there remains then three-fourths of this number, 750,000 cows, that possess no improved blood and in which the production must be uniformly low. Referring to Table No. 42 it will be seen that the difference in production between the poorest cows and the average of all tested is 87.66 pounds of butter fat. If each of the 750,000 cows could be replaced by an average cow, it would mean an increase of 87.66 pounds of butter fat added to each cow's record. If we call it an even 85 pounds increase per cow at twenty-five cents per pound it amounts to \$21.25. The data here accumulated, indicates that such an increase is possible which will be shown under another heading. With an increased return of \$21.25 per cow from 750,000 cows, Illinois dairymen would increase their present income \$15,937,500 a year.

Persistency

The cows yielding less than 150 pounds of butter fat were only 71 per cent as persistent milkers as those yielding above 450 pounds. Those yielding between 150 and 250 pounds were only 86 per cent as persistent

as those yielding above 450 pounds. All those producing less than 250 pounds were but 82 per cent as persistent as those yielding 450 pounds. Such facts point very strongly to the conclusion that greater productiveness may be obtained through lengthening the lactation period. Any system of breeding or kind of management that will intensify this characteristic should be carefully followed.

The Common Practice

The question that is uppermost in the minds of all progressive men is how to improve their immediate conditions most rapidly. In studying the present subject, it develops that the dairymen who are most in need of light upon the plain foundation facts of their business are least aggressive in its search or application. The data at hand shows an appalling absence of energy, ingenuity or foresight on the part of milk producers. They deliberately set aside natural laws and murmur at natural results. As already shown the majority of cows kept for milk production are simply "scrubs." It is a matter of great agricultural and general economic importance that they be replaced by more productive cattle. The days of the "scrub" sire should have been numbered years ago but he still persists in spite of the abundant evidence to the low productive capacity of his inferior progeny. His use in the past is now costing the dairymen of Illinois sixteen million dollars a year. Nearly as subtle an evil and one that has wrought untold havoc in dairy communities is the fallacious notion that a cow may utilize her food equally well for diametrically opposite purposes and thus excell the special purpose animal. This has led to the breeding of the so-called dual-purpose cow in many places where dairying is the

main issue. It is doubtful if a true dual purpose breed exists now in this country, or if such animals can be produced with any degree of certainty from our present cattle. Recognizing these facts, what light does the data collected throw upon the situation? Of course such factors as environment and the administration of properly compounded rations in suitable quantities is of great importance. The low production in many herds is clearly traceable to a failure to provide comfortable quarters and proper food. The animals composing them were eminently able to have made larger returns if they had received more intelligent treatment. But aside from this, standing out clearly and distinctly as the data was sifted, could be read the influence of "blood." Without an opportunity it is helpless, but given the slightest encouragement it makes its value manifest.

Blood Tells

After weighing the other factors that enter into individual production, it has seemed well to determine if possible the influence of improved dairy blood upon the yield. Accordingly the herds studied have been classified as to the presence or absence of grading and the average yield of the whole herd entered in its respective place in Table No. 46. For the present purpose, grading is defined as a conscious effort on the part of an owner to infuse dairy blood into his herd either by the use of a pure-bred dairy sire or through the purchase of high class grade females or both. Anything short of this, throws a herd into the group headed "No grading." Many of the herds classified under "grading" have in reality been subjected to the process but a short time. Nevertheless there is a difference of 85.56 pounds of butter fat per cow in favor of the "grading-

Table No. 46, Showing the Influence of the Presence or Absence
of Dairy Blood upon the Annual Production of Butter Fat.

Grading		No Grading	
No. of Herd	Av.pounds B.Fat	No. of Herd	Av.pounds B.Fat
1	265.38	7	170.47
1	229.72	8	192.51
2	267.75	12	175.41
2	256.61	15	209.36
2	250.31	15	251.17
3	244.93	16	183.52
3	301.66	16	187.63
4	242.32	17	172.64
6	285.21	23	142.05
6	273.33	23	141.81
10	227.31		
11	205.02		
11	229.22		
19	242.94		
19	266.44		
20	235.04		
21	242.87		
21	264.67		
24	350.17		
24	303.93		
27	321.42		
27	396.69		
28	266.00		
Average	268.21		182.65

Difference in favor of grading 85.56 pounds of butter
fat per cow.

up" process in dairy herds. In discussing Table No. 42 it was shown that if three-fourths of the dairy cows of the state could be induced to yield 85 pounds more of butter fat than they are now doing, or be replaced by others capable of doing so the returns from the state's dairy industry would be increased \$16,000,000. We note in Table No. 46 that the process of "grading" has raised they yield 85.56 pounds per cow, as compared with those herds in which "No grading" has been practiced. This fact points the way to rapid and economical improvement in our dairy herds and sheds a flood of light upon the poor man's difficulties. Registered cattle are expensive and difficult to obtain at any price. Pure-bred dairy sires are available and can be obtained at reasonable prices. The Babcock test and the scales permit the determination of the profitable cows whose heifer calves by a pure-bred sire should constitute the future herd. The two are inseparable; they go hand in hand, the test pointing out the cows through which improvement should be sought, the sires adding to and intensifying the dairy capacity of the off-spring.

The Difficulties

In studying the subject some facts have been noted which can not be expressed numerically or arranged in tabular form. Their influence upon the industry is far reaching and of profound significance, especially as concerns the future. Impediments to rapid progress are of a social nature. Dairying is a confining intellectual pursuit. A right attitude of mind is essential to success. A willingness to study ones problems as they arise on his own farm or in his herd is the test of fitness. Dairymen like dairy cattle are bred not made. They evolve in a dairy atmosphere, but are not made according to design. Such men admire the cow and appreciate her delicate organization, to which they administer with profound intuitive power.

In Illinois we have few dairymen but many "cow keepers". They keep cows simply from force of circumstances, possessing neither the sentimental nor the intellectual equipment for efficient work. While they do not actually spurn assistance as a class, some do, as shown in the instance of one man whose herd the Experiment Station desired to test because of its evident inferiority. After several unsuccessful efforts to do so without expense to the owner, he finally agreed to submit his herd to a yearly test by the Experiment Station if the latter would pay him \$100.00 to offset the inconveniences incident thereto. Love for the cow is of great importance but a liberal quantity of dairy science and practice is everyday demonstrating its value. The man behind the cow must be an educated thinking man in order to make his business profitable. The reason why so many herds are being kept at a loss is because the men behind them are putting neither brains nor sentiment into their work. This

is a strong indictment but the facts justify the conclusion. There is little to hope for from the older men now in charge of the herds. The real renaissance will come when the present agricultural college man returns to the farm and seizes the reins of direction.

SUMMARY

In the twenty herds studied including 478 yearly records, the average production was 242.28 pounds of butter fat.

The best herd averaged 396.69 pounds, the poorest 141.81 pounds of butter fat.

The best cow yielded 600.8 pounds of butter fat, the poorest 78.34 pounds

The best ten cows averaged 9140.57 pounds of milk and 505.0 pounds of butter fat.

The poorest ten cows averaged 2587.75 pounds of milk and 100.92 pounds of butter fat.

Of all the records, 12.34 per cent averaged less than 150 pounds and 54.8 per cent averaged less than 250 pounds.

Of all the records, 12.11 per cent averaged more than 350 pounds while only 3.13 per cent averaged more than 450 pounds of butter fat.

At twenty-five cents per pound the best cow tested, paid her owner \$150.20, the poorest one \$19.58, giving a difference of \$130.62.

The average production of the best cows in the herds was 331.13 pounds.

The average production of the poorest cows in the herds was 154.62 pounds or 176.51 pounds less than the average of the best.

The average of all the cows in all the herds was 87.66 pounds greater than the average of the poorest.

The herds in which grading has been practiced, produced 85.56 pounds more butter fat per cow, than those in which no grading had been done.

CONCLUSIONS

Thirty-three and one-third per cent of the cows in Illinois dairy herds, if they are not actually kept at a loss, at least fail to pay a profit.

Competition among dairymen demands a more thorough understanding of the factors involved in milk production. The cow is the all important factor.

There is a crying need for greater appreciation of the value of the scales and Babcock test to the dairyman.

The importance of pure-bred dairy sires is not generally appreciated by milk producers.

The persistent use of "scrub" bulls or those of beef or dual purpose breeding, is causing a loss of \$16,000,000 a year to the dairy farmers of Illinois.

Inadequate housing and care, and improperly compounded rations, prevent large numbers of dairy cows from producing as well as they are capable of doing.

The short time lease in vogue in many places, is antagonistic to the improvement of the herd or its environment.

The practice of selling calves and buying cows to replenish the herd at the time they are needed, is ruinous to the individual owner and destroys confidence in the business.

With but few exceptions, dairying in the most intelligent meaning of the term is almost unknown in Illinois.





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